THE INDUSTRIAL EDUCATION SURVEY
OF THE CITY OF NEW YORK

PART V

INDUSTRIAL CLASSES IN THE PUBLIC SCHOOLS

Report of the Committee Authorized by the Board of Estimate and Apportionment

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FOREWORD

On September 29, 1915, as amended December 15, 1915, the Board of Education requested the Board of Estimate and Apportionment to appropriate $15,000 for the purpose of co-operating with the United States Department of Labor in making an industrial survey for the better guidance of the Board of Education in its extension of industrial education.

The Board of Education was prompted to request funds for the purposes of an industrial survey by the demands of organized labor of the City of New York as expressed in the form of a "Declaration of Principles and Policies of Organized Labor of the City of New York" at a conference held April 20, 1915. This declaration was subsequently officially ratified and endorsed by the following organizations:

New York Central Federated Union; Brooklyn Central Labor Union; Bronx Labor Council; United Hebrew Trades; Allied Printing Trades; United Board of Business Agents of the Building Trades of Manhattan and vicinity; Metal Trades of Greater New York; Men's and Boys' Clothing Trades; Women's Trade Union League; Women's Garment Trades.

This statement which expresses the attitude of organized labor toward the extension of vocational training in the public schools of the city, insists that such training shall be based upon and continually modified with reference to the industrial character of the community. The data upon which vocational training is organized must be gathered in the work shops of the city by a systematic and continuous survey which shall embrace the whole range of industrial activity. Upon only the basis of such a survey can instruction be adapted to the industrial needs of the community. "The school authorities must provide that sort of industrial training that employers and wage earners jointly demand."

As a result of these petitions the Comptroller, as Chairman of the Committee on Education of the Board of Estimate and Apportionment, on December 15, 1915, sent a communication to the latter body outlining the plan of similar surveys and containing certain suggestions as to scope and organization and in which he

recommends that the request of the Board of Education for $15,000 be sent to the Board of Aldermen with the recommendation that special revenue bonds in the said sum be granted, the proceeds thereof to be used by a general survey committee appointed by His Honor, the Mayor, for the purpose of making an industrial survey under the conditions specified.

This recommendation was approved with the result that the following resolution was adopted by the Board of Aldermen on March 7, 1916, and approved by the Mayor on March 14, 1916:

"*Resolved*, That, in pursuance of the provisions of subdivision 8 of Section 188 of the Greater New York Charter, the Board of Estimate be and it is hereby requested to authorize the Comptroller to issue Special Revenue Bonds in the amount of Fifteen Thousand Dollars ($15,000), the proceeds whereof to be used by a Committee to be appointed by His Honor, the Mayor, for the purpose of making an industrial survey for the better guidance of the Board of Education in its extension of industrial education;

"That said Committee be given full power to expend this money in the making of such survey and in directing the same;

"That said Committee be composed of twelve (12) members, of whom three shall represent the Board of Education, two shall be employers of labor, two shall be representatives of organized labor, one shall represent the Board of Estimate and Apportionment, one shall represent the Board of Aldermen, one shall represent the National Society for the Promotion of Industrial Education, one shall represent the New York State Department of Labor and one the United States Department of Labor;

"That the appropriation of Fifteen Thousand Dollars ($15,000) herein made shall be for one year from the date upon which it becomes available, in order to insure the completion of the survey and the report thereon within twelve (12) months."

On April 7th the Board of Estimate and Apportionment approved the resolutions and added the following:

"—and for the purpose of providing means therefor, the Cromptroller be and is hereby authorized, pursuant to the provisions of subdivision 8 of Section 188 of the Greater New York Chapter, to issue Special Revenue Bonds of the City of New York to an amount not exceeding Fifteen Thousand Dollars ($15,000), redeemable from the tax levy of the year succeeding their issue."

The following Committee was appointed by His Honor, the Mayor, on the first of June:

C. R. Richards, Director of Cooper Union, Chairman
John Martin, Member of Board of Education
*Thomas J. Carroll, member of Board of Education
William J. Ettinger, Associate Superintendent of Schools

*Died October 27, 1916.

Miss Florence M. Marshall, Principal, Manhattan Trade School for Girls

Mrs. Mathilde C. Ford, Secretary, Committee on Education, Board of Estimate and Apportionment

Charles Delaney, Board of Aldermen

Royal Meeker, United States Commissioner of Labor Statistics.

George A. Stevens, New York Department of Labor

Arthur D. Dean, Director, Division of Agricultural and Industrial Education, New York State Education Department.

C. G. Norman, President, Manhattan Fireproof Door Company.

Frederick Alfred, President, M. B. Brown Printing and Binding Company.

Emil J. Deering, Business Agent, International Association of Machinists.

John J. Munholland, Pattern Makers' League of North America.

Mrs. Sidney C. Borg, Chairman, Committee on Investigation of Commercial Schools.

The Committee held its first meeting on June 27, 1916. At the second meeting on July 5, Mr. Lewis A. Wilson, Specialist in Industrial Schools of the New York State Department of Education, was appointed as Director. Mr. Wilson was granted leave of absence by the Department in order to undertake this work. It was decided at a subsequent meeting, on account of the limited time and resources at the disposal of the survey, to confine the industrial studies to the four trades of printing, machine work, inside electrical work and carpentry and joinery, and on the school side to investigate only the four day vocational schools maintained by the city and the evening, part-time and co-operative industrial classes then in operation.

In the early fall a field and office staff was appointed and the active work of the survey began in November. The field and office work in the studies of administration, licensing of teachers, day and evening schools was made by Mr. Herbert Blair, working under the director. Mr. R. D. Fleming assisted in the study of the evening schools and Mr. Arthur F. Payne of the co-operative and part-time classes. The field work of the trade surveys was, for the most part, finished in January, while that of the school survey continued through the month of May.

Early in the progress of the survey, employers' organizations and labor unions representative of the four trades under study were invited to appoint committees to confer and co-operate with the director in regard to the conduct of the trade investigations. As a result, committees were appointed by the following organizations:

Association of Employing Printers:
William Green, William Green Company
G. F. Kalkhoff, President, Kalkhoff Company
Hiram Sherwood, President, Read Printing Company
John C. Oswald, Oswald Press, Editor American Printer
Gustav Zeese, Zeese-Wilkinson Company
Frederick Alfred, President, M. B. Brown Printing and Binding Company.

New York Master Printers' Association:
Joseph C. Este, The Este Press
William Kiesling, President, Master Printers' Association and President of the Kiesling Co.
William Driscoll, Vice-President, Master Printers' Association and Manager of the Lecouver Press.
Charles Francis, President, Charles Francis Press
George J. Hurst, Hamilton Press

Allied Printing Trades Council:
Leon H. Rouse, President, Typographical Union No. 6
Theodore A. Douglas, Business Agent, Typographical Union No. 6
Herbert F. Mulroy, Business Agent, Pressmen's Union No. 51
E. W. Edwards, Secretary, Allied Printing Trades' Council
Philip Umstadter, President, Pressmen's Union No. 51

Master Carpenter Association of the City of New York:
Hugh Getty, Hugh Getty, Inc.
W. S. Faddis, Cauldwell-Wingate Co.
William J. Hoe, James C. Hoe's Sons
Richard Moller, Sloane & Moller, Inc.
R. B. Smith, R. B. Smith & Co.

United Brotherhood of Carpenters and Joiners of New York City:
Charles A. Judge, President and General Agent of United Brotherhood of Carpenters and Joiners of New York City

John Halkett, Vice President and General Agent of United Brotherhood of Carpenters and Joiners of New York City

John Rice, Secretary, of the United Brotherhood of Carpenters and Joiners of New York City.

John Towers, Secretary and Treasurer of the Concrete Alliance

John Donovan, General Agent for the United Brotherhood of Carpenters and Joiners of New York City

H. Blumenberg, Business Agent of the United Brotherhood of Carpenters and Joiners of New York City

Independent Electrical Contractors' Association:

Louis Freed, President of Independent Electrical Contractors' Association and Prop. of Jandous Elect. Equipment Co., 109 West 31st St., New York City.

M. H. Bettman, Chairman of Committee, Prop. Manhattan Elect. Con. Co., 108 West 17th St., New York City

William Bleyle, Prop., Bleyle Elec. Co., 84 Cortlandt Street, New York City

George Brooke, Prop., Manhattan Elect. Maint Co., 1989 Amsterdam Avenue, New York City

Electrical Contractors' Association of New York:

L. K. Comstock, L. K. Comstock & Co.

E. J. H. Thiemer, Electrical Engineer and Contractor.

E. J. Murphy, New York and Queens Electric Light and Power Co.

Inside Electrical Workers of Greater New York, International Brotherhood:

William J. Walsh, President of the Inside Electrical Workers of G. N. Y. I. B.

G. W. Whitford, Secretary of the Inside Electrical Workers of G. N. Y. I. B.

Charles Du Bourg, Vice-President of the Inside Electrical Workers of G. N. Y. I. B.

Arthur O. Maves, Chairman Examining Board, Inside Electrical Workers of G. N. Y. I. B.

Paul McNally, Business Agent of the Inside Electrical Workers of G. N. Y. I. B.

National Metal Trades Association:

Christopher Cunningham, Christopher Cunningham Co.

F. L. Schmidt, F. L. Schmidt Co.
Paul Pryibil, Paul Pryibil Co.
Charles Ross, C. Ross & Son Co.
Louis Doilling, De La Vergne Machine Co.

International Association of Machinists:
George H. Stilgenbauer, Business Agent and Secretary of Lodge 434.
M. J. Carney, Business Agent
C. A. Durbin, Business Agent
D. Walkins, Garage

These committees held frequent conferences with the director during the progress of the survey and gave much helpful advice as to methods of collecting the desired data; later they checked the findings of the trade studies as to accuracy of facts and finally developed recommendations as to educational provisions for the respective trades.

Later in the progress of the survey, a number of prominent school men in different parts of the country were invited to serve on advisory committees dealing with the special phases of the educational problem. Each of these individuals accepted the invitation tendered with the result that the following committees were organized:

Administration:
Leonard P. Ayres, Russell Sage Foundation, New York City
C. A. Prosser, Diretor, Dunwoody Institute, Minneapolis, Minn.
David Snedden, Teachers' College, New York City

Licensing and Employment of Teachers:
C. A. Prosser, Dunwoody Institute, Minneapolis, Minn.
Arthur D. Dean, State Dept. of Education, Albany, N. Y.
Samuel S. Edmands, Pratt Institute, Brooklyn, New York

Day Vocational Schools:
Charles R. Allen, State Board of Education, Boston, Mass.
Francis H. Wing, Director Vocational Education, Buffalo, N. Y.
E. E. McNary, Director of Vocational Schools, Springfield, Mass.
L. H. Carris, Assistant Commissioner of Education, Trenton, N. J.

Evening Trade Schools:

L. W. Mathewson, Director Industrial Department, Dickinson High School, Jersey City, N. J.

C. R. Dooley, Principal, Casino Technical Evening School, Pittsburgh, Pa.

C. B. Furney, Director of Evening Vocational Schools, Albany, N. Y.

Part-Time and Co-Operative Classes:

R. O. Small, Deputy Commissioner of Education, Boston, Mass.

E. A. Cooley, Director of Continuation Work, Milwaukee, Wis.

M. B. King, Assistant Commissioner of Education, Harrisburg, Pa.

A special committee on provisions for the printing trade was also appointed as follows:

A. L. Willison, Director, Wentworth Institute, Boston, Mass.

C. B. Connolly, Director of the School of Trades, Carnegie Institute, Pittsburgh, Pa.

Wm. B. Kamprath, Principal, Elm Vocational School, Buffalo, N. Y.

When the findings of the trade and school surveys were completed they were submitted to the various advisory committees which later met in New York City and formulated recommendations within their respective fields.

These recommendations together with the findings as a whole were finally considered by the survey committee and the recommendations formulated which appear in the completed report.

This report the committee decided to first issue in five parts:

1. The Printing Trade
2. Inside Electrical Work
3. Carpentry and Joinery
4. The Machinist Trade.
5. Industrial Classes in the Public Schools.

THE ADMINISTRATION OF INDUSTRIAL EDUCATION IN NEW YORK CITY

In dealing with the various forms of industrial education that have been introduced into the public school system of New York City during recent years, little attempt has been made to develop an administrative organization especially fitted to direct this new type of activity. Control of this work has been lodged in the elaborate system developed to administer work of the conventional type and few adjustments have been made to meet the peculiar and exacting needs of the new form of instruction.

Six statutory authorities more or less affect or control the development and activities of the vocational schools, as follows: The State Department of Education, The Board of Estimate and Apportionment, The Board of Aldermen, The Board of Education, The Board of Superintendents and The Board of Examiners. The state law also provides that an advisory board of five members representing the local trades, industries and occupations shall be appointed by the Board of Education. Such an advisory board was appointed for New York City in November, 1915, but as its powers were not specifically stated in the statute it has not been able to exert any considerable influence upon the situation.

The State Department of Education: The New York State Education Law of 1910, Section 94, contains the following provisions as to the control of the Commissioner of Education over the public schools of the state:

He is the chief executive officer of the state system of education and of the Board of Regents. He shall enforce all general and special laws relating to the educational system of the state, and execute all educational policies determined upon by the Board of Regents.

He shall have general supervision over all schools and institutions which are subject to the provisions of this act or of any statute relating to education, and shall cause the same to be examined and inspected and shall advise and guide the school officers of all districts and cities of the state in relation to their duties and the general management of the schools under their control.

He shall have general supervision of industrial schools, trade schools and schools of agriculture; he shall prescribe regulations

governing the licensing of the teachers employed therein; and he is hereby authorized . . . to provide for the inspection of such schools . . . and to advise and assist boards of education . . . in the establishment, organization and management of such schools.

In a bulletin on vocational schools issued by the University of the State of New York May 1, 1913, the following conditions are laid down by the Commissioner of Education as necessary for sharing in allotments of state funds:

1. That the school shall be maintained for thirty-six weeks, that it shall have an organization and a course of study and be conducted in a manner approved by the Commissioner of Education;
2. That the equipment must be suitable and sufficient for the proposed work and afford opportunities for practical experience in the occupations for which the pupils are to be prepared;
3. That the teaching force must satisfy the Commissioner as to ability to teach;
4. That courses of study for each school shall be left to the local authorities, who should submit their programs to the Commissioner of Education for revision and approval;
5. That pupils should be especially fitted for their intended occupations;
6. That mathematics, drawing and science should be taught in a way practically useful to the pupils in the particular occupations for which they are being trained;
7. The instruction should aid in the wise selection of an occupation and lead boys and girls to industrial careers.

Compliance with the foregoing conditions is necessary in order to secure the aid granted by the state to promote industrial training. The apportionment for each general industrial school, part-time, or continuation school, or evening vocational school meeting the state conditions amounts to a sum equal to two-thirds of the salary paid to the first teacher appointed in each school plus one-third of the salary to each additional teacher, the state aid for any one teacher, however, shall not exceed one thousand dollars.

The Commissioner of Education also recommends that the advisory board be consulted in outlining proper courses of study, in selecting practical equipment and in determining the vocational efficiency resulting from the vocational instruction. He suggests also that a special and separate advisory sub-committee might usefully be appointed by the advisory board for each important trade or occupation taught in the school. Such special sub-committee would preferably consist of two persons, an employer and an employee.

In order that the state may know that the requirements of the Commissioner of Education are met, the industrial classes are visited at regular intervals by one of the state inspectors in charge of vocational activities. Each year the work in some classes has not met with the approval of the inspectors and the state aid has been refused.

The Board of Estimate and Apportionment: The revised Charter of the City of New York* contains the following provisions as to the powers and duties of the Board of Estimate and Apportionment relative to the public schools:

The Board of Estimate and Apportionment and the Board of Aldermen of the City of New York may raise and collect by tax . . . such sum of money as may be necessary to provide for the conduct of the schools as called for by the budget adopted by the said Board of Estimate and Apportionment and the said Board of Aldermen pursuant to the provisions of this act.

The Board of Estimate and Apportionment shall appropriate for the general school fund an amount equivalent to not less than three mills on every dollar of assessed valuation of the real and personal estate in the City of New York.

The said Board shall annually between the first day of October and the first day of November meet and make a budget of the amounts estimated to be required to pay the expenses of conducting the public business of the City of New York, such budget shall be prepared in such detail as the said Board of Estimate and Apportionment shall deem advisable.

The Board of Estimate and Apportionment shall have the power at any time to transfer any appropriation for any year which may be found by the office having control of such appropriation to such other purposes as may require the same.

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*The provisions of the above paragraph have been superseded by the following provisions in the new state education law which became operative June 8, 1917.

"The board of education in each other city (those having a population of over one million) shall prepare annually an itemized estimate for the ensuing fiscal year and file the same on or before the first day of September.

"If the total amount requested in such estimate shall be equivalent to or less than four and nine-tenths mills on every dollar of assessed valuation of the real and personal property in such city liable to taxation, the board of estimate and apportionment shall appropriate such amount. If the total amount contained in such estimate shall exceed the said sum of four and nine-tenths mills on every dollar of assessed valuation of the real and personal property of such city liable to taxation, such estimate shall, as to such excess, be subject to such consideration and such action by the board of estimate and apportionment, the board of aldermen, and the mayor as that taken upon departmental estimates submitted to the board of estimate and apportionment."

The special three-mill tax which the charter* decreed should be appropriated for the general school fund has only in part met the needs of the schools in recent years and the Board of Education has been obliged each year to secure the extra funds needed through the Board of Estimate and Apportionment.

The requirement that the budget for educational purposes be submitted by early fall, necessitated that estimates of the several amounts required be prepared by the school authorities in the spring of each year. Each division head must, consequently, estimate far ahead the amount required to operate his department for the coming fiscal year.

Although it is difficult for any division of the school system to estimate its needs far in advance, it is doubly difficult for those in control of the schools for vocational and industrial training. Such work is still in an experimental stage and consequently standards of costs have not been worked out. An extension of the work that is desired must not only meet the approval of the executive officers of the Board of Education and the board itself, but must also meet with the approval of the members of the Board of Estimate and Apportionment. The refusal of the Board of Estimate and Apportionment to include funds for the separate maintenance of the Murray Hill Vocational School and for the trade extension classes carried on in conjunction with the Manhattan Trade School for Girls in the school budget for 1917 illustrates the control this board has exercised over vocational education.

Board of Aldermen: The Board of Aldermen formerly had authority upon the recommendation of the Board of Estimate and Apportionment to provide by ordinance for the acquisition of school sites and the construction of new buildings, but under the new "Pay-as-you-go" policy as incorporated in the charter in 1916, it has practically no authority over the authorization of funds for new school buildings and sites. The Board of Aldermen may, however, reduce the amounts fixed by the Board of Estimate and Apportionment for the maintenance of the school system in the annual tax levy budget but such reduction is subject to the veto power of the Mayor which veto can only be overridden by a three-fourths vote of the Board of Aldermen.

The Board of Aldermen has no power of control in regard to the salaries paid to teachers, examiners and members of the super-

*Section 60 of the Revised Charter which provided the three mill tax was repealed by the new Education Law. See Section 881, subdivision 6.

vising staff of the Department of Education, but it has the power upon the recommendation of the Board of Estimate and Apportionment to fix the salaries of the clerical force of the Board of Education and the rates of compensation paid the janitors of the school buildings. The minutes of the Board of Aldermen show that many of their acts, an average of a hundred each year, concern the Department of Education. While these acts refer mainly to the wages of janitors and clerks the aldermen also have taken up such matters as providing for school luncheons and the supplies that are used in the schools.

The Board of Education: The revised charter* of the City of New York provides that a Board of Education consisting of 46 members shall have the management and control of the public school system of the city and that the board shall have power to administer all moneys appropriated for educational purposes in the City of New York.

The By-laws of the Board of Education provide for thirteen standing committees of from five to nine members each, the Committee on Vocational Schools and Industrial Training having seven members.

Each of the thirteen standing sub-committees of the Board of Education has certain clearly defined duties as well as other duties which are not so clearly defined. Few matters are presented to any committee that can be settled without being referred to some other committee of the Board of Education for its approval, or to some other board outside of the Board of Education. As each committee can only transact business at its regular meetings or special meetings called by its chairman, this communication between committees must be done by time-consuming correspondence.

The By-laws contain the following reference to the Committee on Vocational Schools and Industrial Training:

Section 22a. 1. The Committee on Vocational Schools and

*The sections of the charter relating to public education are superseded for the most part by the new education law which provides that a city having a population of one million or more shall have a board of education to consist of seven members, and which sets forth various specifications as to the powers of the board concerning the creation of positions, appointment of officers and teachers, maintenance of schools, purchase of sites, construction of buildings and administration of moneys appropriated for educational purposes. It remains to be seen just how the organization of the new board of seven members will differ from that designed for the larger board.

Industrial Training shall have charge of all matters relating to vocational training in the special day schools devoted to that purpose and of all matters relating to evening trade schools and afternoon vocational courses established in day schools.

2. Recommendations of the Board of Superintendents with regard to selection of textbooks, books for supplementary reading, apparatus and other supplies for vocational schools, for evening trade schools and for afternoon vocational courses established in day schools shall be filed with said committee and shall be transmitted, with its recommendations as to approval or disapproval, to the committee on studies and text books for action thereon.

3. Except when otherwise ordered by the board, said committee shall conduct all trials of principals and teachers in the schools specified in subdivision 7 of this section, against whom charges have been brought and shall report its conclusions to the board for action thereon.

The chairman of this committee in reply to a questionnaire submitted to him stated that his committee has interpreted the by-law which states that it shall have charge of all matters relating to vocational training "to mean that all matters concerning the schools which require the approval of the Board of Education shall be considered by the committee and reported upon with recommendations to the Board of Education."

"Courses of study have not been submitted by the board of superintendents to the vocational schools committee, but have been tentatively approved by the superintendent in charge of vocational activities, because it has been recognized that full latitude should be given to the principals of these schools to develop courses of study from the practical needs of industry and all the educational value of each activity until such time as it would be possible to standardize these courses."

"Employers' associations and unions have not been asked to assist in the development of the course of study in trade subjects. Representatives of trade unions have been requested to visit the schools and to offer suggestions. One delegate did offer suggestions to Dr. Ettinger as to the introduction of certain topics in civics which suggestions have been followed."

Board of Examiners: Both by provisions in the charter and in the new education law a board of examiners is designated for the City of New York. It is the duty of this board to hold examinations whenever necessary to examine all applicants who are required to be licensed or to have their names placed upon eligible lists for appointment in the schools in such city, except examiners, and to prepare all necessary eligible lists. The board may employ

temporary assistants at a compensation fixed by the Board of Education. The influence of the board of examiners upon the industrial work is discussed under the section relating to the licensing of teachers.

Board of Superintendents: Both the charter and the new education law provide that there shall be eight associate superintendents, and the superintendent of schools and such associate superintendents shall constitute a board of superintendents. They both provide that the board shall possess among others the following powers:

"To prepare the content of each course of study authorized by the Board of Education.

"To recommend suitable lists of textbooks to be used in the schools.

"To transfer teachers from one school to another.

"To make rules for the promotion and graduation of pupils.

"It is also provided in both instruments that the Board of Education on the recommendation of the board of superintendents shall designate the kind and grades of licenses for all positions in the teaching and supervising staff below that of district superintendent, together with the qualifications required for each kind or grade of license.

"And that all members of the teaching and supervising staff except associate superintendents and examiners shall be appointed by the Board of Education upon the recommendation of the board of superintendents."

It will be seen from the above quoted sections from the new education law that the board of superintendents are largely responsible for the direction of the school system. They recommend the textbooks and supplies, prepare the courses of study, designate the kinds of licenses and the qualifications required for each and nominate, promote and transfer principals and teachers.

In order that each member of the board of superintendents may specialize in some branch of administrative work, the board is organized into eight committees, each member of the board constituting a committee. The eight committees are (1) high schools and training schools; (2) elementary schools; (3) studies and supplies; (4) vocational activities; (5) duplicate and intermediate schools; (6) evening and vacation schools; (7) buildings and economy; (8) rules and service. The administration of the industrial work, so far as the board of superintendents is con-

cerned, is thus divided between two men; the day vocational schools, the continuation and co-operative schools are under the associate superintendent in charge of vocational activities, while the evening trade schools are under the associate superintendent in charge of evening schools.

The administration of the evening trade schools differs from that of the day industrial classes. The charter provides that twenty-three of the district superintendents shall be assigned by the city superintendent to the work of supervision in the local school board districts and the remaining three district superintendents "shall be assigned by the city superintendent to such other professional duties as the welfare of the school system may require." Under this provision the city superintendent has assigned one of the district superintendents to be in charge of the evening schools. The day industrial classes are thus directed by the associate superintendent in charge of vocational activities while the evening trade classes are directed by the district superintendent assigned to this work by the city superintendent of schools.

Supervision of Industrial Classes

The direction of the day vocational schools is only a small part of the work required of the associate city superintendent in charge of vocational activities. Likewise, the evening trade schools, registering as they do less than one-tenth of the total number enrolled in the evening schools, are far from being the most important part of the evening school work. In selecting men to serve as associate superintendents and as district superintendents, the Board of Education apparently chose men whose training and experience was such as to fit them for the larger duties they were to perform. The result is that there is no one in charge of the industrial work in either the day schools, the evening trade schools, co-operative or part-time classes, who by training or experience can be said to be a specialist in the field of industrial education.

Day Vocational Schools: The chart on page 30 represents certain significant data in regard to the teaching organization, courses of study, enrollment and equipment in the day vocational schools. This would seem to bring out a certain want of unity in the policies governing the work of these schools together with the absence of certain elements generally considered essential to efficient school management. Some of the situations that appear are as follows:

1. In the Manhattan Trade School, the Murray Hill and the Brooklyn Vocational Schools the teachers of academic subjects are teachers who were receiving the maximum salary in the elementary school and were given $200 additional salary when they were transferred to teach in the vocational school. Ever since its organization in 1909 the teachers of academic subjects in the Boys' Vocational School have been chosen from the list of substitute teachers awaiting appointment to permanent positions in the elementary schools and have been paid the salary of substitute teachers.

2. Except in the Boys' Vocational School, the academic teachers have a five-hour day and a year of ten months, while the trade teachers have a seven-hour day and a school year of eleven months. In the Boys' Vocational School the academic teachers as well as the trade teachers are employed for seven hours a day for a school year of eleven months.

3. In the Murray Hill and the Brooklyn Vocational Schools for boys, the trade teachers are selected from the substitute list and paid the salary of substitute teachers. This has been true since these schools have been organized. The salary of substitute teachers is about half the schedule for regular trade teachers and less than half the salary paid the teachers of academic subjects who teach but five hours a day. The Manhattan Trade School for Girls also uses substitutes for the teaching of trade subjects and pays the teachers of academic subjects from two to three times as much as is paid to the teachers of trade subjects. The Boys' Vocational School, on the contrary, has a majority of its trade teachers on the regular salary schedule and uses substitute teachers for the academic subjects.

4. In the Boys' Vocational School and the Manhattan Trade School the trade classes and the academic classes are about the same size. In the Murray Hill and Brooklyn schools the classes in the academic subjects average twice as large as the trade classes. In these two schools the large academic classes were made up of groups from different trades and different semesters which made it practically impossible to secure correlation between the academic and trade instruction.

5. The poor quarters, inferior equipment and overcrowded classes of the Murray Hill and Brooklyn Schools possibly are the reasons why the shop work in these two schools consists mainly of exercises. All of the shop work in the Manhattan Trade School is commercial in character. In the Boys' Voca-

tional School the printing is a commercial product, as is also some of the work in the sheet metal and woodworking shops.

The Part-Time Industrial Classes and the Industrial Co-operative Classes: The part-time industrial classes have not been organized for a sufficient length of time for them to be out of the probationary stage. The courses of study are in the process of formation and so show all the strength and weakness incident to the beginning of any new form of school activity. In some plants there was a very close correlation between the classroom instruction and the shop work of the boys attending these classes. In others the instruction was general in character and no correlation existed between the two.

The energies of the co-ordinators in the co-operative classes seem to have been devoted to securing new firms with which to co-operate and new pupils to take the places in these classes of those boys and girls who were leaving the course. As a consequence little time was left for the co-ordinators in which they could supervise the character of the instruction offered in the schools. As in the case of the part-time industrial classes there were conspicuous instances where the classroom instruction was tied closely to the shop work of the pupil, but when such was the case it seemed due more to the superior ability, interest and energy of the classroom teacher than because of any supervision which the teacher had received.

The attitude of the associate superintendent in charge of the day vocational schools, co-operative and part-time industrial classes toward the work of supervision is indicated by the answers to a questionnaire submitted to him.

> *Ques.* Do you feel that supervisors should be provided for each of the principal trade subjects taught in the vocational schools or can the work be supervised successfully by the principal?
>
> *Ans.* No. Principals possess the requisite technical knowledge for the successful supervision of trade subjects. Qualifications for principals include practical experience in the trades.
>
> *Ques.* Are conferences held between the teachers of like trade subjects in the different vocational schools?
>
> *Ans.* No. The organizations are different.

Ques. What can this committee recommend that will be most helpful to the advancement of industrial education in New York City?

Ans. The greatest service your committee can render is to recommend the establishment of a vocational bureau along the following lines: (a) Superintendent of Vocational and Industrial Education, (b) Technical Director, (c) Chief Mechanician, (d) Draftsman and Statistician, (e) Clerk and Stenographer.

(a) The Superintendent of Vocational and Industrial Education should be a broad-minded, sympathetic executive, and possess a thorough knowledge of local school problems. He should have full power to carry out the policies of the Board of Education unhampered and unrestrained by details.

(b) The Technical Director should relieve the Superintendent of all technical work. He should be held responsible for the equipment, installation and maintenance of the machines, tools, and apparatus necessary for instruction purposes; supervise shop and academic instruction; assist principals and teachers in their work by holding conferences, etc.; suggest and lay out courses of study for new work, or modifications of old ones when necessary; plan enlargements; standardize equipments; scrutinize and approve requisitions; secure necessary data for statistical purposes, and undertake the solution of the thousand and one problems of a technical character which present themselves daily in every great undertaking. He should be a man who has received the training of an engineer, and who, in addition, has had considerable practical experience in teaching trade subjects. He should bear to the Superintendent the same relation that the chief engineer bears to the president of a railroad.

(c) The Chief Mechanician should be under the direct supervision of the Technical Director. It should be his duty to repair all machinery and apparatus used for instruction purposes; keep all installation at their highest efficiency. He should assist the Technical Director in his work. One of his functions should be experimental work for the purpose of determining the feasibility from the standpoint of time, expense, and its effects on the pupils of manufacturing material for use of the Bureau of Supplies, and other city departments. It is evident that he should be a thoroughly competent mechanic.

(d) The Draftsman and Statistician should look after layouts required for new equipments; collate and put into presentable form various statistics required for various reports; take charge of a well-organized card system covering every phase of the work, including equipment, supplies,

repairs, efficiency tests, courses of study, vacancies, substitutes, applications, assignments, conferences, reports, trade catalogs, quotations, drawings and tracings, blue prints, etc.

(e) Clerk and Stenographer. The purposes for which the incumbents of these positions are desired are self-evident.

Evening Trade Schools: The supervision of the evening trade classes is left almost entirely to the principal of the school. A fuel engineer from the department of supplies is assigned as supervisor of trade classes and trade equipment. This lack of central supervision is shown in the content of such courses of study as have been prepared; the varied standards for the admission of pupils to trade classes; the different kinds of instruction offered in classes having the same titles; the facilities provided in the way of equipment and supplies; and the lack of co-operation between the schools and the employers' associations and the unions most vitally interested in the subject in which instruction is offered. Some of the results of this lack of supervision might be listed as follows:

1. The courses of study in any trade subject, being the work of the individual instructor, showed as great a variation in their character and content as is shown in the teaching of the subject. Because practically every plumber who attends the evening school does so in order that he may learn to wipe lead joints, the courses of study and the instruction in this subject are very similar in all schools. The mechanical drawing classes, for example, composed of pupils representing many different industries and occupations, are widely different not only for different schools but also for the pupils of the same trade group, such as machinists, in the same school.

2. The rules of the Board of Education require that the attendance in evening school classes be limited to workers in the trade or branch of the trade. The liberal interpretation of the word "branch" on the part of some of the principals of the evening trade schools produced groups having representatives of as many as a dozen different occupations in the same class.

3. A course in mechanical drawing might, as in one school, be copying drawings from blue prints or books, or it might be blue print reading for machinists, or structural steel designing; shop mathematics might be either general arithmetic taught to mixed groups from a so-called vocational arithmetic, or it might be a carefully worked out and graded series of problems based upon some one occupation.

4. Those evening trade schools that are located in day schools having superior facilities for trade instruction have this same equipment for the use of the evening school classes. On the other hand, there are trade classes where the teachers must furnish all of the equipment and supplies that are used by the pupils.

5. Little attempt has been made to secure the co-operation of employers' associations and unions in the work of the evening trade classes for the city as a whole. Such co-operation as has been secured has been the work of individual principals and confined to the trades where all of the trade instruction is centered in one school. In the important trade groups, such as machine shop practice, printing, plumbing and electrical work that are taught in several schools, there was no evidence that either the employers' associations or the unions had been an important factor in determining the course of study, the entrance requirements or the character of the instruction offered.

The district superintendent in charge of evening schools submitted the following replies to the questions concerning administration submitted to him:

Ques. Do you hold regular meetings with the principals of the evening trade schools?

Ans. During the first year of my administration I endeavored to hold regular meetings with all the principals. I found it did not pay. It was too great a task on the principals and the results were better served (a) by personal interviews on my visits specifically and (b) through circularization generally.

Ques. Do you hold general meetings of evening school teachers of trade subjects?

Ans. I do not.

Ques. Have you ever arranged to have all the teachers of any one trade come together to work out courses of study and a general method of work?

Ans. Each principal is supposed to call together and in fact does call together at more or less frequent intervals all the teachers of one trade to work out with him courses of study and general method of work.

Ques. What provision has been made for the special supervision of the teaching of each of the different trades taught in the evening trade schools?

Ans. The Board of Education has assigned Mr. John R. Cave as Supervisor of Trade Classes and Trade Equipment.

CHART SHOWING THE DIFFERENCE IN ORGANIZATION IN THE FOUR VOCATIONAL DAY SCHOOLS

Name of School	Brooklyn Vocational	Murray Hill	Boys Vocational	Manhattan Trade School
Length of Course	Two years	Two Years	Two Years	One Year
Percent of Elementary Graduates in Total Enrollment	98%—8th Grade Graduates	83%—8th Grade Graduates	82%—8th Grade Graduates	70%—8th Grade Graduates
Time given to academic courses	Four-sevenths	Four-sevenths	One-half	Two-sevenths
Teachers for academic courses	Transferred from elementary school	Transferred from elementary school	Substitute teachers waiting for assignment	Transferred from elementary school
Hours for trade and academic teachers	Trade—7-hr. day Academic—5-hr. day	Trade—7-hr. day Academic—5-hr. day	Trade—7-hr. day Academic—7-hr. day	Trade—7-hr. day Academic—5-hr. day
Length of school year for teachers	Trade—11 mos. Academic—10 mos.	Trade—11 mos. Academic—10 mos.	Trade—11 mos. Academic—11 mos.	Trade—11 mos. Academic—10 mos.
Salaries for trade and academic teachers at time of survey	Trade—$5 day Academic—$2600 yr.	Trade—$5 day Academic—$2600 yr.	Trade—½ $1500 to $2500 ½ $5.00 day Academic—$5.00 day	Trade mainly substitutes at $2.50 to $3.50 a day Academic—$1700 to $2000
Size of classes	Trade, 12-24 Academic, 20-60 Average, 40	Trade, 1-30; average, 18-20 Academic, 20-50; average, 40	Trade, 10-30; mostly, 18-22 Academic, 10-30 mostly, 18-22	Trade, 10-25 Academic, 20-35
Holding power of school	30% to 35% who enter complete the course	20% to 25% who enter complete the course	35% to 40% who enter complete the course	35% to 40% who enter complete the course
Character of shop work	Mainly exercises	Mainly exercises	Commercial in printing, Sheet metal, woodwork. Other shops mainly exercises.	All work done in shops a commercial product
Building and Equipment	Crowded quarters, equipment limited	Both building and equipment unsuited to trade instruction	Building and equipment best in the city	Building poor — equipment fair

He observes and inspects various kinds of trade classes and makes report to me. The general supervision, however, of the trade classes is left to the principal, who is a selected expert and presumably competent to supervise the work.

Ques. In your opinion what provision should be made for the supervision of the evening trade classes?

Ans. At present I am satisfied with the amount of supervision that we have. Later I should like supervisors representing various general trades to work each a certain number of evenings in supervision. By general trades I mean one printing expert who would examine into all the classes that have anything to do with that trade.

Advisory Board: An advisory board was appointed for the City of New York in November, 1915. Up to the present time the board has been consulted to a certain extent in regard to the selection of equipment and some other matters, but very few questions have been submitted to them for their consideration and on the whole the committee has had little influence in directing the policy of industrial education in the city.

Summary: The conditions herein outlined concerning the administration of vocational and industrial schools indicate a situation of divided responsibility and one that is lacking in expert control and adequate supervision. The lack of centralized responsibility makes it almost impossible to deal with the problem as a whole and the fact that no provision is made for the supervision and direction of the various divisions of day vocational schools, evening trade schools and part-time and co-operative classes by persons of special training and experience prevents assurance either of unity in the organization and methods of such divisions or of full efficiency in the work of the teaching units. It is evident also that the present arrangement of one advisory trade board reporting to the Board of Education has not in practice proven an effective plan to develop a real influence on the part of employers and employees on the conduct of industrial education. It would seem that much more specific definition of powers and much more intimate representation of the various trade interests concerned in industrial school work are essential to make this influence effective.

RECOMMENDATIONS OF THE ADVISORY COMMITTEE ON THE ADMINISTRATION OF INDUSTRIAL EDUCATION IN THE NEW YORK CITY SCHOOLS.

The value of the work done by the Board of Education of New York City in the field of industrial education will largely depend on the form of organization that is adopted for conducting it. The work of the survey has convinced those engaged in its studies that this new line of work cannot be largely successful unless it is organized on a plan providing for efficient administration and future expansion to a degree not possible under the conditions that now obtain in the administration of the work.

Essentials of Good Administration: The essential basis for the efficient administration of any extensive co-operative activity may be summed up in the three words, "organize, deputize, supervise." It is as true in the administration of industrial education as in almost every other sort of collective effort that the efficiency of the work and the character of the results are largely determined by the leadership that directs the project. In order to attain such efficiency the government of the system must depend on organized direction rather than on personal preference or individual control. It must be an organization in which each man contributes his share to effective team work by having a clear understanding of the scope of his own duties and of his relationship to the man above, the one at his side, and the man below.

Authority and Responsibility: In a scientific organization responsibility must be definite, not vague; authority must be concentrated, not scattered. Powers and duties must be so allotted that no man in the organization will be responsible to two superiors. The lines of authority and responsibility must always be through the officers charged with varying degrees of power and duty and never over, under, or around them. This means that the lines of authority must be the same as the lines of responsibility.

The Pyramid Type of Scientific Organization: There is a form of organization which possesses the desirable characteristics that

have just been described. It may well be termed the "pyramid form of scientific organization." It has been developed through centuries of human experience until it is now the generally accepted form of control in armies and on ships. It is a form of organization consisting of a series of groups of workers so arranged in a well-ordered system that each group has a leader who in turn belongs to a group of other leaders of equal status, all looking to a still superior leader for guidance. It is a form of organization by systematic classification and combination of graded groups.

At the base of the pyramid are the private soldiers, the common sailors, or the classroom teachers, as the case may be. These are responsible to under-officers or heads of departments, who in turn look to their lieutenants, mates, or principals for guidance. These are under the direction of still higher officers such as captains, masters and directors until by similar progressive graduations the ultimate authority and responsibility is lodged in the general, the admiral or the superintendent.

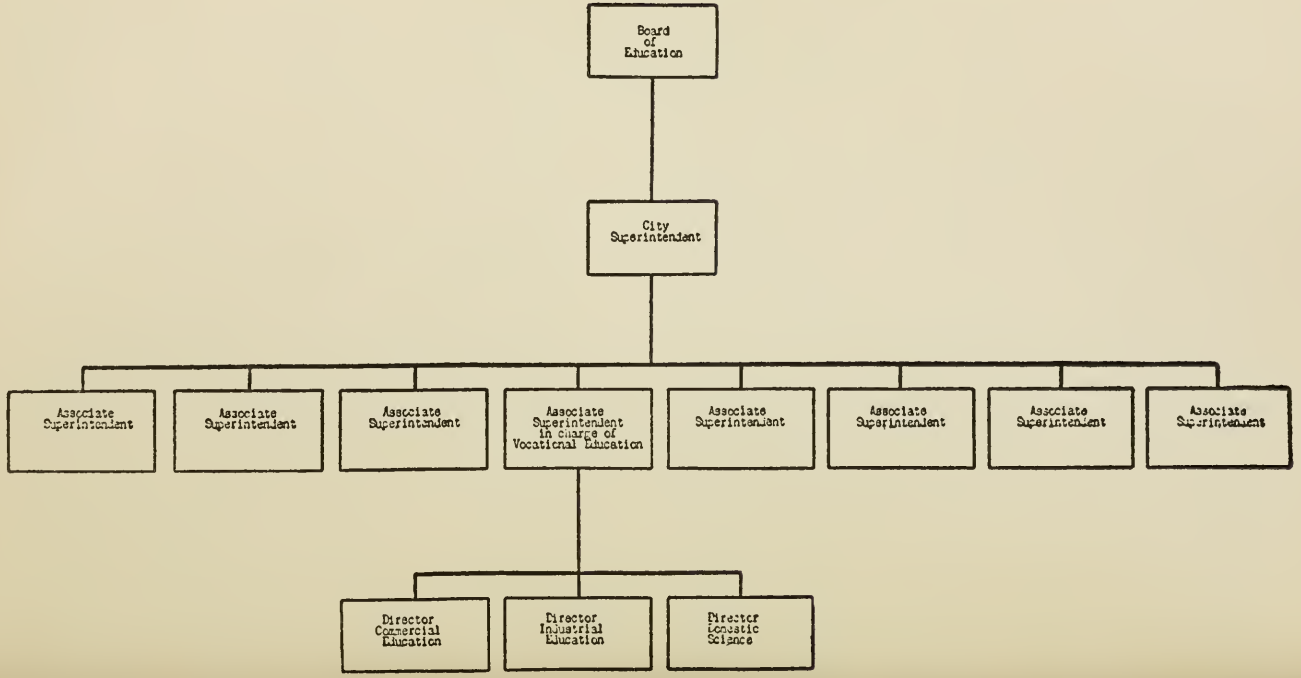
If such an organization is carefully worked out along valid lines, each man in it will have clearly defined ideas of his duties, his responsibilities, and his powers. He and his co-workers will substitute choice for chance and compel chaos to give way to co-ordination.

The Organization of Industrial Education in New York City: A scheme is herein proposed for organizing industrial education in the City of New York on the plan described. It is graphically presented in three accompanying charts. Chart 1 (p. 34) shows the outlines of the system. At the top of the chart and the top of the system is the Board of Education. Deriving his powers from the board is the executive officer, the city superintendent. Below the city superintendent are the eight associate superintendents, one of whom is charged with the duty of administering vocational education in the city. This official exercises leadership over the three great divisions of vocational education, viz., commercial education, industrial education, and home economics.

Ideally this officer should be a person of extended experience and proven ability in the field of vocational education, and it would seem desirable in filling future vacancies in the board of superintendents that endeavor be made to secure such a person for the duties of this position. Until this can be accomplished it may be well to appoint an assistant to the associate superin-

CHART 1

ORGANIZATION CHART FOR ADMINISTRATION OF INDUSTRIAL EDUCATION IN THE CITY OF NEW YORK (ADVISORY COMMITTEE)



tendent designated for this work, who possesses the above qualifications and to whom could be delegated the actual supervision and direction of vocational education.

In a complete scheme for vocational education there would be a separate diagram showing in detail the organization of each of the above three main branches. For the purposes of the present report only one of these has been developed. Chart 2 (p. 36) shows the organization plan for industrial education. It will be noted that the different officials are designated according to the office that they hold. The line of authority and responsibility runs directly and without break from the board to the city superintendent in charge of vocational education. Subordinate to this general director there are three assistant directors in charge respectively of day vocational schools, evening trade work, and part-time industrial work.

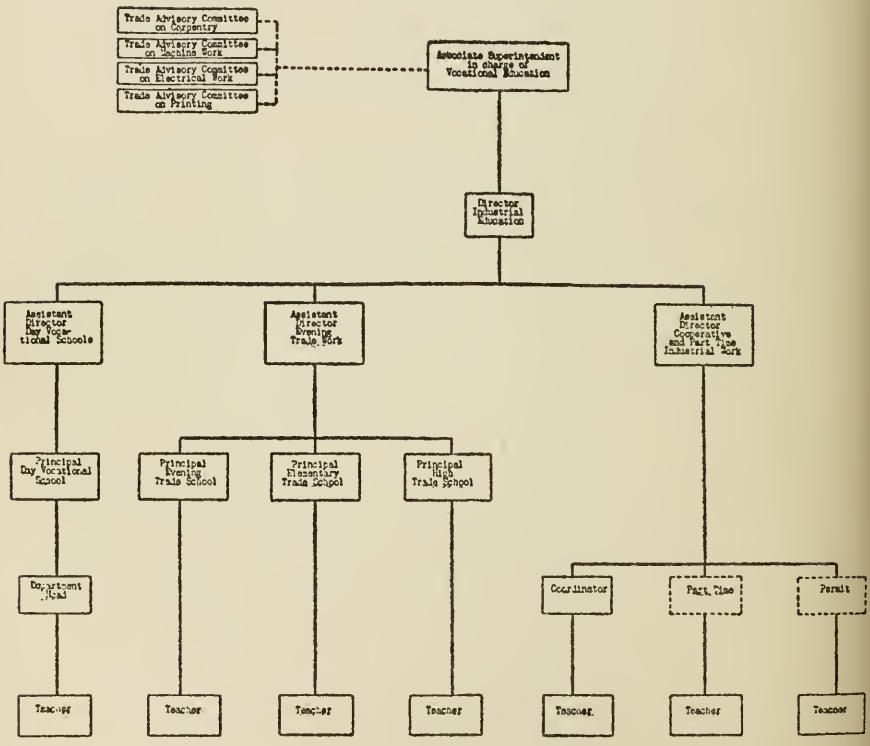
The whole system of day vocational schools is organized under the authority of the first of these three assistant directors. Immediately subordinate to him are the principals of the several day vocational schools. Under each principal is a number of heads of departments within his school, and finally below these department heads are the teachers of the different subjects. In the chart each of these grades is shown as a single unit, but in reality each one below the grade of assistant director is multiplied several times or as many times as the number of schools may require.

A similar organization is found under the assistant director of evening trade work. Here there are principals of evening trade schools, elementary trade schools, and high trade schools. There might be department heads subsidiary to these officials if the development of the work required it, but the chart is drawn in conformity with present conditions with the lines of responsibility running down directly to the shop and classroom teachers.

A similar plan would fit the case of the organization of the co-operative and part-time work. There is one assistant director in charge. In this case there are no principals of schools since the work is organized by classes and the lines fall directly to the co-ordinators and the teachers. In the case of the part-time classes and the permit classes the position corresponding to that of co-ordinator has been indicated by dotted lines so as to show that the position of supervisor might be created as the future needs may demand but that it is not as yet necessary.

CHART 2

ORGANIZATION CHART FOR ADMINISTRATION OF INDUSTRIAL EDUCATION IN THE CITY OF NEW YORK
(ADVISORY COMMITTEE)



Non-Vocational Industrial Work: Chart 3 (p. 38) relates to what may be termed "Non-vocational industrial work." This consists of manual training and of the shop work in the schools organized on the Ettinger and Gary plans. These forms of industrial work are not truly vocational because they do not have for their controlling principle the direct preparation of the pupils for money-earning occupations. Their work is general in character. It has for its object the making of a contribution to the all-round education of the boys and girls. This distinction as to the essential character of the work is one of the reasons for showing the organization in a separate chart.

There is in addition a second reason and this is to be found in the difference between the kind of control exercised over the trade schools and classes entering into Chart 2 and that exercised over the work of the non-vocational industrial classes shown in Chart 3. In the former case the trade schools involved are entirely under the jurisdiction of the different officials appearing in the chart and hence their powers are those of direction and control. In the case of the non-vocational classes appearing in Chart 3 the different officials exercise powers of supervision and advice but not direction and control.

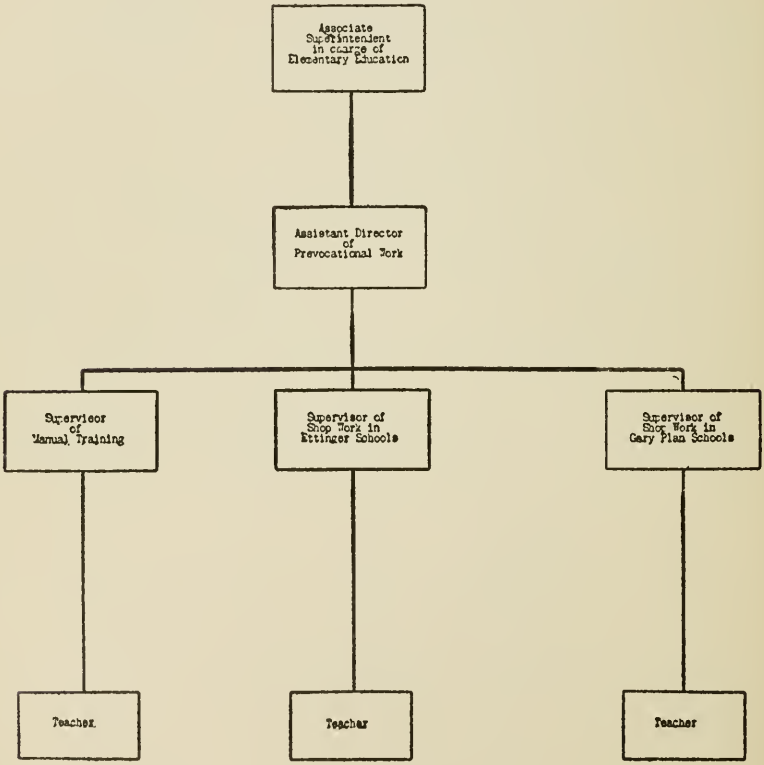
Since the work of these classes contributes to general education rather than to strictly vocational education, and since the function of the different officials is supervisory rather than directive, it has been deemed wise to make a separate chart and to indicate the line of authority and responsibility as running up to the associate superintendent in charge of elementary education rather than to the associate superintendent in charge of vocational education.

It must be recognized, however, that for reasons of immediate efficiency and convenience of administration it might be found advisable to place the manual training classes and the shop work in the schools run on the Ettinger and Gary plans under the same general direction as that controlling the strictly vocational industrial schools. In this case Chart 3 would be added to the right-hand end of Chart 2 as an extension, and all of this work would be made subsidiary to the associate superintendent in charge of vocational education.

In order to insure the essential co-operation of the trades and industries in the administration of industrial education it is further recommended that advisory committees consisting of employers and employees be appointed by the Board of Education

CHART 3

ORGANIZATION CHART FOR NON-VOCATIONAL INDUSTRIAL EDUCATION IN THE CITY OF NEW YORK
(ADVISORY COMMITTEE)



for each of the trades of printing, carpentry, machine work and electrical work. The functions of such committees cannot legally be those of control or veto. It is clear, however, that if they are accorded specific advisory powers and definite provision be made for the consideration of their recommendations the way will be opened for the exertion of a very real and important influence on their part. The relations of such advisory committees should be with the officer in charge of vocational education and this officer should be instructed, before action is taken upon such matters, to invite the recommendations of the committees as to the establishment of new industrial schools and classes; the selection of equipment; the content and length of courses of study; the requirements for graduation and certification; the number of pupils admitted to day vocational schools.

(Signed) Leonard P. Ayres,
C. A. Prosser,
David Snedden.

LICENSING AND EMPLOYMENT OF TEACHERS

Board of Examiners

As has been previously noted both by provisions in the charter and in the new education law a board of examiners is designated for the City of New York. It is the duty of this board to hold examinations whenever necessary, to examine all applicants who are required to be licensed or to have their names placed upon eligible lists for appointment in the schools in such city, except examiners, and to prepare all necessary eligible lists. The board may employ temporary assistants at a compensation fixed by the board of education.

Under the above positions the board of examiners is granted the power of selecting all of the teachers for the public schools of the City of New York. The table given below shows that the number of examinations given to those desiring to teach in vocational and pre-vocational schools was very small compared to the total number of examinations given by the board. The requirements for pre-vocational shop teachers are the same as those for vocational shop teachers.

TABLE SHOWING THE TOTAL NUMBER OF LICENSES GRANTED AND REFUSED DURING THE YEARS 1914, 1915 AND 1916 AND THE NUMBER OF LICENSES GRANTED AND REFUSED TO TEACHERS IN VOCATIONAL SCHOOLS.

	1914			1915			1916		
	Granted.	Refused	Total	Granted.	Refused	Total	Granted.	Refused	Total
Exams. given...	14,232	6,258	20,490	14,768	6,248	21,016	9,270	3,389	12,559
Teachers in Vocational Schools..	3	1	4	6	5	11	139	512	651

To examine over 21,000 people in a year intensively and extensively is a task so great that it is impossible for an outsider to comprehend its magnitude. In order that the board of examiners might supply the best type of teachers, "keeping out as many as possible of the relatively unfit and as few as possible of the relatively fit," the board is organized into 30 committees, each

committee representing a different type of license. The chairmanship of the several committees passes in rotation each year from one examiner to another, so that each member of the board influences each phase of the work of the school system. The only part of the work of the board that is described in this report is that dealing with the examination of the teachers of industrial subjects.

Requirements for Eligibility for Vocational Licenses: The requirements for eligibility for vocational licenses have been determined by the Board of Education and incorporated in the by-laws. These requirements, summarized below, give the educational and trade requirements for eligibility for the various grades of licenses:

1. To be eligible for a license as a principal of a vocational or trade school, the applicant must have one of the following qualifications:—

"(a) Graduation from a college or university recognized by the Regents of the University of the State of New York, together with ten years' satisfactory experience in the practice of a trade and in teaching or supervision, provided that no less than two years of such ten years' experience shall have been in the practice of a trade.

"(b) Graduation from a college or university recognized by the Regents of the University of the State of New York, together with ten years' satisfactory experience in teaching or supervision, provided that not less than two years of such experience shall have been in teaching, supervision or investigation in vocational education."

2. A substitute teacher of a vocational or trade subject in a vocational school for boys must have five years' successful experience as a journeyman wage earner, or in a higher position, and a general education satisfactory to the board of examiners.

3. A regular teacher of a vocational or trade subject in a vocational school for boys must have in addition to the above requirements a year's satisfactory service in teaching the same vocation.

4. A teacher of sewing (both regular and substitute) must have a high school education or its equivalent, together with the completion of a two-year course in domestic art in an approved institution.

5. A substitute female teacher-clerk must have had three years' satisfactory experience in office work.

6. A substitute assistant female teacher-clerk must have had two years' satisfactory experience in office work.

7. A substitute trade-order teacher must have had three years' satisfactory experience in the special branch of the vocation, the substitute assistant trade-order teacher must have had two years' experience.

8. A substitute vocational helper must have completed one year's course in a girls' vocational or trade school.

9. A placement and investigation teacher must have three years' satisfactory experience in placement and industrial work.

10. A license as teacher in a vocational or trade school shall qualify the holder to teach his subject in a vocational or trade school or in an evening trade school.

11. A supervisor or substitute supervisor of continuation classes must have a high school education and five years' experience in teaching or three years' experience in commercial or technical occupations, together with two years' experience in teaching.

Frequency of Examinations: When new positions are created by the board of superintendents or when vacancies occur the board of examiners are notified and eligible lists are prepared from which to select teachers to fill the positions. The claim is made by members of the board of examiners that it has not been possible for them to ascertain sufficiently far in advance the needs of the vocational schools.

The vocational lists are good for three years. They are renewed except where something unsatisfactory appears in the record of the candidate during the first three years. The license of a man who has an unsatisfactory record as a substitute during the first three years may not be renewed.

How Examinations are Advertised: The vocational examinations are advertised as follows:

1. Copies of the circulars announcing the vocational examinations are sent to the New York daily newspapers. One newspaper publishes the circulars in full and several other papers publish a synopsis of the announcement.

2. The circulars are sent to all the institutions east of the Mississippi River that train men for vocational work. These institutions include technical institutions such as the Sheffield School, Massachusetts Institute of Technology, Stevens Institute, etc.

3. The announcements are sent to the headquarters of the trades unions in the respective branches covered by the examinations. The list used for this purpose is found in the Eagle Almanac.

4. The circulars are sent to the superintendents of schools in the large cities east of the Mississippi River.

Order of Examinations: The written examination is the first given to a candidate for a regular license to teach in a vocational school. If the candidate passes this examination he is permitted

to take the practical and oral examinations which are usually given on the same day. A candidate who passes successfully these examinations is given the physical examination and if he passes it his name is placed on the eligible list.

Second Examination: If the candidate fails in either the practical or the oral examinations or both, he is, upon appeal, given within a few months another test before another set of examiners. This is true in all examinations whether vocational or academic.

Written Examination: The purpose of the written examination is to ascertain whether the candidate is qualified to explain in writing the details of his work, the methods of shop processes, the operations of machines, etc., and to show how he would present certain points in lessons. The questions are intended to be not academic but practical, so that practical men who speak good English and have a reasonably good command of language may pass the examination.

Questions for the written examination are submitted by various experts to the board of examiners who take these questions and put them in the final form for the examination. When considered necessary, outside help is secured in determining the questions to be used.

The written examination counts 20 points out of the 100 points. The passing mark is 60% of the 20 points or 12 points. This examination is what might be called a pass examination and not strictly a competitive examination, the margin of difference being only eight points out of 100 points between the candidate who passes the examination and the one who gets the maximum credit of 20 points.

If a candidate fails on the written examination he is not allowed to take the practical examination.

Practical Examination: The second part of the examination of the candidate for a vocational license is the practical test to determine the candidate's ability as a trade worker. Until about six months ago nearly all of the practical tests were given in the school shops. During the past few months the board of examiners have made an effort to hold the practical examinations in shops outside the school where the equipment is typical of commercial practice. The last examinations in printing, bookbinding, sheet metal and automobile repairing were held in outside shops. Mr. O'Connell of the board of examiners has stated

that "no more practical examinations will be held in school shops if we can possibly avoid it."

The practical tests are usually from one hour and a half to three hours in length and consist in working out one or two practical problems.

Oral Examination: The oral examination is usually held in connection with the practical test and lasts approximately from fifteen to twenty minutes. This examination is given by one of the members of the board of examiners. The purpose of this examination is to eliminate those who are unfit because of defective English, unsatisfactory personality or inability to explain simple matters about which inquiries might be made by pupils in the school. Set questions are not asked in this examination. A marking slip is used and the salient points of the candidate's answers and the remarks of the examiner are indicated on this slip.

Physical Examination: A physical examination is given by one of the regular physicians of the Board of Education to determine the candidate's physical condition.

Teaching Experience: A candidate for a regular license to teach in a vocational school must have at least one year's satisfactory service in teaching the vocation in which he desires a license.

Passing Marks: The table below shows the passing marks and the weighting for the different parts of the examination for vocational teachers:

TABLE SHOWING PASSING MARKS FOR VOCATIONAL SCHOOL EXAMINATIONS.

	Maximum.	Minimum.	
Written Examination.....	20	12	(60%)
Practical Experience	10	7	(70%)
Teaching Experience.....	20	14	(70%)
Practical Test.....	30	21	(70%)
Personality	20	14	(70%)

Substitute Licenses: The examination for a substitute's license to teach shop work in a day vocational school includes the written, oral and practical tests described above. This examination is less difficult than the examination for a regular license and is

aimed to determine in a general way a candidate's fitness to teach. A substitute's license is good for one year, but may be renewed annually by the superintendent of schools.

Evening Trade School Licenses: An applicant for a license to teach a trade subject in an evening school may qualify under any of the following requirements:

(a) Graduation from an approved college or university recognized by the Regents of the University of the State of New York.

(b) Eligibility for license as teacher in day high school.

(c) A high school education or its equivalent, and the completion of a satisfactory course of at least one year in the special subject or in lieu of such course, two years' experience in day or evening schools teaching the special subject.

(d) Four years' satisfactory experience in the practice of the subject for which the applicant seeks a license.

The examination for a regular license to teach shop work consists of a written, practical and oral examination. The license is renewable from year to year upon recommendation of the principal of the school and the district superintendent in charge of the school.

In case of emergency, substitute licenses are issued to candidates who meet the requirements described above.

Credit for Trade Experience: A candidate who has had a longer trade training that is required for eligibility to take the examination (*i.e,* for five years' experience in the trade) may be given a credit of one year for each three years' practical experience up to an allowance of three years. This method has not been satisfactory due to the fact that it does not sufficiently attract the experienced trade workers. As a result of the above condition the board of examiners often make exceptions and give allowances which will cause the first year's salary to be the equivalent of what the men actually earn in the trade. The board are revising the rules so as to make the allowances for outside training more attractive.

Credit for Teaching Experience: The allowance for outside teaching experience is more generous than for trade experience. The board of examiners allow for outside teaching experience in excess of the year of experience required for eligibility, at the rate of one year of credit for each two years of teaching experience up to a maximum allowance of three years for teaching experience or trade experience, or both.

Number of Candidates Examined: The table on page 41 prepared by the board of examiners shows the number of candidates examined, the number of licenses granted, the number of candidates who failed and the reasons for the failures of those examined during the year 1916. The chart shows that a large number, 512 out of 651, failed to pass the examination. The figures presented would indicate that 323 candidates failed on the written examination, which is intended by the board of examiners to be not academic but practical so that practical men who speak good English and have a reasonably good command of language may pass the examination.

CHART NO. 4

RESULTS OF EXAMINATIONS OF 1916 FOR LICENSES TO TEACH VOCATIONAL SUBJECTS.

(N.B.—The figures given under the reasons for refusals cannot be totaled with respect to each subject, inasmuch as some candidates were refused licenses for two or possibly three of the reasons listed.)

			Refused on Account of					
	Total	Granted	Written	Oral	Practical	Record	Ineligible	Withdrawal	Medical
Power Machine Operating.....	14	4	8	..	..	1	2	.	.
Sheet Metal Work.....	13	7	..	..	2	.	.	1	.
Electric Installation and Practice.	52	16	11	11	11	7	6	4	.
Agriculture	8	..	4	..	1	7	6	4	.
Novelty Work.....	10	3	4	..	..	1	2	.	.
Sewing and Dressmaking.....	54	22	17	3	3	3	11	1	.
Woodworking	56	14	35	4	6	2	3	1	.
Tile Laying	10	..	6	..	..	.	.	.	.
Applied Science	5	1	2	..	1	.	1	.	.
Women's Garment Designing.....	5	2	3	..	..	.	.	.	.
Art Weaving	1	0	..	1	..	.	.	.	.
Architectural Drawing	68	..	44	3	5	.	1	.	.
Bookbinding	14	4	11	..	..	.	1	.	.
Millinery	36	20	6	3	3	1	7	.	1
Mechanical Drawing	17	2	9	..	3	2	1	.	.
Sign Painting	15	4	3	2	1	1	1	1	.
Machine Shop Practice.....	75	11	44	7	11	3	.	.	.
Printing	61	12	23	5	7	3	4	2	.
Modeling	11	4	4	..	..	.	1	.	.
Plumbing	79	5	56	3	9	.	.	1	.
Automobile Repairing	15	7	5	1	1	.	1	.	.
Trade Drawing (June, 1916)....	14	..	14	..	..	.	.	.	.
Trade Drawing (2d in Oct., 1916)	18	1	14	1	..	1	2	1	.

Assistant Examiners: Chart No. 5 prepared by the board of examiners gives a list of the vocational examinations held during the year 1916-1917 and the names of the assistants in the written, practical and oral examination. This list shows that in a number of cases certain individuals assisted in conducting examinations in trades of widely varying character who could not have had extended practical experience in the trade.

CHART NO. 5

DEPARTMENT OF EDUCATION

The City of New York

OFFICE OF THE BOARD OF EXAMINERS

500 Park Avenue

Assistant Examiners employed in 1916-1917 examinations in Vocational Subjects.

Subject	Readers of Written Papers	Assistants in Oral and Practical Tests
Bookbinding	Adeline E. Simpson	Adeline E. Simpson James Strang
Novelty Work	M. L. Hutchinson	Morris E. Siegel Annie B. Moriarty
Agriculture	Morris E. Siegel	Morris E. Siegel
Sign Painting	Morris E. Siegel	Messrs. Patterson, Otterbein and A. J. Gude Ernest Yalden
Clay Modeling	James P. Haney	John E. Wade
Art Weaving	Mattie M. Schilling	Leon W. Goldrich Morris E. Siegel
Woodworking	George F. Stahl	George F. Stahl A. W. Garrett
Electric Wiring	Chris. A. Kassenbrock Charles B. Howe	George J. Loewy Chris. J. Kassenbrock Charles W. Mitchell
Sheet Metal Work	John T. Robinson	Charles B. Howe M. J. Harrison
Trade Drawing	Morris E. Siegel John E. Wade	John E. Wade George F. Stahl
Power Mach. Operating	Florence M. Marshall	Morris E. Siegel Annie B. Moriarity
Millinery	Mrs. Annie L. Jessup Miss Minnie L. Hutchinson	Minnie L. Hutchinson Annie B. Moriarity Mary B. Dickman
Dressmaking	Mrs. Annie L. Jessup Miss Minnie L. Hutchinson	Mrs. Annie L. Jessup Florence Willard

Subject	Readers of Written Report	Assistants in Oral and Practical Tests
Plumbing	James M. Joyce Michael F. Conlon	George J. Loewy Robert W. Rodman
Mach. Shop Practice	Stanley A. Gage Betram A. Lenfest	Stanley A. Gage Betram A. Lenfest
Printing	Hobart H. Todd Oliver G. Andrus	Morris E. Siegel Leon W. Goldrich Charles E. Fitchett
Applied Science	Robert W. Fuller	George J. Loewy Robert W. Fuller
Mechanical Drawing	T. Harry Knox	Frank Gardner Charles B. Howe
Arch. Drawing	A. B. Greenberg E. C. Zabriskie	George J. Loewy Morris Greenberg
Tile Laying	Charles B. Howe	(Not yet held)
Automobile Repairing	H. C. Brokaw	Mr. Breckenbridge (57th St. Y. M. C. A.) John Cave
Designing of Women's Cloaks and Suits	Morris E. Siegel	Morris E. Siegel Max Meyer
Trade Drawing	Adolph J. Grubman	John E. Wade

Attitude of Board of Examiners: That the board of examiners devote much thought to the means necessary to secure the best type of instructors for trade classes in spite of the many difficulties they have to overcome is shown in the report of Examiner O'Connell for 1915 to Superintendent Maxwell:

"The number of applicants for vocational school licenses is very large and the variety of subjects taught in the vocational schools and classes extensive. To enable the system to obtain the best applicants requires unusual care and much time. I fear that the proper amount of attention and investigation cannot be given to the applicants unless the board of examiners gets proper assistance. It is true that in the past we have, as occasion required, employed in an advisory or examining capacity certain high school first assistants and others skilled in the trades. This assistance, though given cheerfully, must of necessity be hurried, as well as intermittent and often done under unsatisfactory conditions. The selecting of trade teachers has become a matter requiring the greatest skill and care and because of the number of applicants and of subjects to be taught it will hereafter take a vast amount of time and labor even under favorable circumstances."

In writing about evening school licenses Mr. O'Connell says: —"The board has endeavored to make all tests as practical as possible. This idea is carried to the extreme in the examinations for trade subjects in evening high schools. In bookbinding, blacksmithing, costume design, jewelry design, mural decoration, etc., the applicants were required to do a piece of practical work or to submit for inspection attested practical work (or photographs thereof). In the oral examination which followed the test or accompanied the inspection of the attested work, considerable weight was given to the applicants' evidence of successful practical experience."

Attitude of Those in Charge of Day and Evening Vocational Courses Toward Methods of Licensing Teachers.—The associate superintendent in charge of vocational training in reply to a questionnaire submitted to him stated that he considered the chief defects in the present methods of securing and licensing of teachers of vocational schools to be:—

(a) "A false conception of what is desired in a trade teacher.
(b) "Methods employed in examining.
(c) "Methods employed in rating examinations."

In reply to the question "What changes would you suggest that would tend to procure better teachers?" he recommended:—

"1. Taking the examination of trade teachers out of the hands of the board of examiners, and placing it in the hands of a committee composed of a member of the board of examiners, a principal of a vocational school, two representatives of the trade, in which the candidate seeks a license, and an employer of the trade.

"2. Examinations should extend over a longer period and take into account a man's practical experience at the trade to an extent that is not being done at present.

"3. More latitude should be given the principals in the choice of teachers. The mere standing of a candidate of any eligible list should not hamper the work of a school."

In a questionnaire submitted to the district superintendent in charge of evening schools a number of questions were asked relative to the training and certification of evening teachers of trade subjects. The questions submitted and the answers are given below:

Ques. Who selects the teachers for the evening trade classes?

Ans. Teachers for evening trade classes are selected in order of merit from the eligible lists. These eligible lists have been formed under the law according to the charter

by the board of examiners. The examination is mostly oral plus practical test. Practical test is conducted by some acknowledged expert assigned by the board of examiners and the practical test is held either in a shop or preferably in one of the evening trade schools.

Ques. Who is assigned by the board of examiners to give the examinations to candidates desiring to teach trade subjects?

Ans. Answered in preceding question partly.

The oral examination is held usually by a committee of three, the chairman of the evening school department of board of examiners, at present Mr. O'Connell; the district superintendent in charge of evening schools, at present Mr. Henry E. Jenkins, and a selected trade expert. The two non-trade experts merely judge the man from the pedagogic side, from his manner and ability to expound and explain. In other words, judgment of his probable teaching ability. The expert judges as I stated in a preceding question, by the selected expert.

Ques. Would you recommend the establishment of evening normal courses for mechanics desiring to teach in evening trade schools?

Ans. I would not recommend normal courses in evening schools. I have already removed such as were in our evening schools and we had a number. Evening schools were made for the distinct purpose of teaching those who through unfortuitous or other circumstances are not able to attend school in the day time. The ideal trade school would be the type of the mechanical school where the workman left his employment at day at the expense of the shop. At present this work is of course voluntary. I should under no circumstances desire to have us establish normal courses.

Ques. To what extent could such a course take the place of the examination for a license to teach in evening trade schools?

Ans. No course should ever take the place of examination. The course is a recommendation and should assist in raising the rating of the individual and his position on the eligible list, but I do not believe in any applicant for a license to teach anything, being exempt from examination.

Ques. Would you rather select your evening school teachers from the ranks of the day school teachers or from the trade workers? Why?

Ans. This question has practically been answered in other answers, nor could I answer this categorically because I should desire to select from a properly prepared eligible list. I should like them from the ranks of day school teachers of vocational subjects who have been skilled workmen in trades and I certainly should prefer those to taking the skilled workmen out of the ranks who had had no training

or experience in teaching pupils. At the same time I should prefer a well informed intelligent man directly from the ranks of the trade worker rather than an ordinary day school teacher with a theoretical knowledge only and no proper amount of direct contact through work in a shop.

To be specific, we need for teachers in evening trade classes men who are fine representatives of practical trade workers, leaders in their trades who have had ambition enough themselves to attend courses in recognized institutes where preparation for teaching trades is made the specific object. The type of man possessing the practical plus the pedagogical training and having had ambition and intelligence enough to look for both, would be the best type of trade teacher and I am glad to say that in time the teachers on our eligible list for evening trade schools would come in that class.

I consider that the manner in which the board of examiners has handled this delicate and new form of problem is extremely gratifying. I believe that no other city has so large a number of well equipped and well trained teachers of evening trade classes as has our evening school system of the City of New York.

REPORT OF THE ADVISORY COMMITTEE ON LICENSING AND EMPLOYMENT OF TEACHERS OF INDUSTRIAL EDUCATION.

The board of examiners was constituted in 1898 for the purpose of removing the certificating and appointment of teachers of all kinds and grades from politics—a duty which the board has undoubtedly performed in a most commendable way.

At the same time, this strong desire on the part of the board to protect the schools from the evils of partisan politics forced the adoption of a more or less rigid system of examining applicants with the written test as the chief, and in most instances almost the sole, means of determining fitness to teach. This system has seemed to work satisfactorily—at least it has served as well or better than almost any other scheme would have done—in the selection of an eligible list of instructors in the so-called regular or academic subjects.

It has not, however, served satisfactorily in the case of teachers of practical or technical subjects where manual skill or the ability to use knowledge in a practical way has come to be regarded as absolutely necessary to the success of the teacher. The board has already recognized the need for greater flexibility in dealing with instructors in industrial or trade schools by

substituting a practical for a written test of the applicant's skill in shop processes—this test usually being given by the assistant principal or some instructor in the particular trade employed by one of the vocational schools of the city.

The number of teachers in vocational schools who have thus far been examined is so small, comparatively speaking, that the tests thus far given should hardly be regarded as more than experiments. Out of a total of 73,661 persons seeking licenses during the years 1912 to 1915, inclusive, only 77 applied for positions in the vocational schools.

It is evident from the report that the board looks upon the whole question of licensing teachers of shop and related shop subjects as being a new, a difficult and as yet unsolved problem. While it recognizes the need for flexibility in dealing with such teachers, the board is at the same time very jealous, and properly so, of the freedom of the schools from partisan politics which it has labored so successfully to establish.

What the members of the board desire most of all is some scheme for licensing teachers of vocational subjects which will test in an effective way the ability of the applicant to teach the subject successfully and will at the same time safeguard the whole process of certificating and selecting these teachers from party and personal influence. It is with entire sympathy with this aim of the board that the recommendations given below are made.

We recommend that the board appoint a special committee for every distinctive trade for which there is a need of teachers in either shop or related shop subjects. The members of the committee should be appointed for one year and should be reappointed as long as their services are satisfactory and they are willing to serve.

There should be three members, one of whom should be a member of the examining board in order to correlate the work of the board and its special committee; and two of whom should be trade education experts who are experienced in their knowledge of the trade and of education for the trade. The two lay members of the committee should be paid a per diem for the actual time given to the duties assigned to them as herein described, which need not, in our opinion, be more than five days annually.

The special committee on the certification of teachers for any given trade should be regarded and legally could be only an

agency used by the board to assist it in the difficult and highly specialized task of obtaining competent instructors for the schools in the shop and related shop subjects of that trade. The board would, of course, establish such general standards and such general rules and regulations for the guidance of the work of the committee as it found advisable from time to time. It should not, however, make these so detailed or so rigid as to prevent the committee from being of the largest possible helpfulness in passing upon applicants. All authority to pass finally upon the case of any applicant rests and should rest with the board. The duty of the committee should be that of recommendations to the board on the case, based on a complete handling of the case, and a filing with the board of all the papers regarding the applicant which the board should treat as the credentials on record in the case.

The special committee should avail itself of our different elements in examining teachers of trade subjects; written examinations, credentials, personal interviews and practical demonstration.

The efficacy of written examinations as the sole means of testing the general education of teachers has probably been greatly overestimated. Nevertheless, its long established use in connection with the certification of regular school teachers is certain to cause its employment for industrial school purposes.

The written examination can aid in some measure in establishing a presumption of fitness to teach. But this is true only if the examination is limited to a test of such knowledge as general schooling, technical and teaching equipment.

Written examinations are of very little value in testing the trade ability and personal equipment of candidates. So far as the trade instructors are concerned, it is also true that their general schooling and knowledge of trade matters can best be determined by proper credentials, practical demonstrations, and personal interviews.

Proper credentials should be given an important place in determining the fitness of an applicant. By credentials is meant evidence which may be accepted as bearing upon any feature of the qualifications of candidates for certification. Statements as to trade standing and skill furnished by employers and fellow-workers, diplomas, certificates, school records, correspondence school work; personal statements of former teachers; magazine articles or books written by the candidates; statements as to

teaching ability based on previous service as instructor of apprentices or as a teacher, should all be considered as credentials in this connection.

Those credentials are a most important device in certificating because they admit of flexibility in dealing with the case of any teacher. They can be made to represent the judgment of many persons from many different points of view. They furnish first hand information of a very real character as to the candidate's ability to do certain definite things and they have a bearing upon every feature of probable fitness for the work.

The personal interview is absolutely necessary to properly estimate the qualifications of the applicant in such matters as appearance, personality, health, adaptability and saneness of social and economic points of view. It also has an important use, supplementary to the written examination and credentials, in furnishing additional information concerning teaching equipment and trade experience. Such interviews should be conducted only by persons having both adequate knowledge and experience on the one hand and official responsibility on the other.

The practical demonstration may be used to supplement other tests. After all these devices have been employed, if any doubt exists as to the trade qualifications or teaching ability of the candidates they may well be required to perform a practical task of some kind, either in a commercial or school shop.

All the information of every kind concerning the applicant should be before the special committee in passing on the case. All this material together with recommendation of the committee should be presented to the board for final action.

Any plan for the certification of teachers of vocational schools should be based on a distinct classification of such teachers according to the kind of subjects to be taught and the status of the teacher in the service. Three distinct types of teachers will be needed:—teachers of shop subjects such as machine shop practice or composition work in printing; teachers of related technical subjects such as drawing, mathematics and science; and teachers of non-vocational subjects such as English and civics. The law also requires that all new employees of the Board of Education, including all members of the teaching and supervising staff, shall be appointed in the first instance for a probationary period of not less than one year and not to exceed three years; such period to be fixed by the Board of Education at its discretion. At the expiration of this probationary period, teachers shall, when rec-

ommended for permanent appointment by the board of superintendents, be entitled to hold their respective positions during good behavior and efficient and competent service. This gives the examining board the duty of dealing with two classes of teachers within every classification of teachers made on the basis of subjects taught—probationary teachers and regular teachers.

In dealing with standards for teachers in vocational schools therefore it is necessary to consider the following six classes: probationary and regular teachers of shop subjects; probationary and regular teachers of related technical subjects; probationary and regular teachers of non-vocational subjects.

In suggesting certain definite standards for these teachers, the committee have had in mind only minimum requirements—the least qualifications which we believe the board of examiners should establish as a basis for the work of the special committees appointed to aid in passing upon applicants as above required. It is, of course, highly desirable that applicants should possess higher qualifications than those suggested.

Male applicants should be not less than 25, not more than 40 years of age; and in the case of women not less than 21 nor more than 40. The difference in the minimum age for men and women is made because, as is well known, the latter mature at an earlier age and because a smaller number of years is required to learn most of the women's trades. We believe, also, that applicants over 40 should not be accepted because they have reached the period when a certain fixity of mind and a shorter expectancy of life does not promise large returns in efficient teaching service to a school system. This, of course, applies only to beginners in the teaching work and should not operate in the case of a successful teacher over 40 desiring to enter the service in New York.

Three factors should be taken into consideration in passing upon the applicant: trade knowledge and skill, teaching ability and general education.

The Probationary Teacher of Shop Subjects: The applicant should, if a man, present evidence of at least five years of approved and successful experience or its equivalent in the shop work which he desires to teach. In the case of a woman, the applicant should present evidence of two years' successful experience in the trade or occupation approved by the committee or its equivalent.

The teacher of shop subjects should have at least a common school education or its equivalent.

The Regular Teacher of Shop Subjects: As has already been pointed out, a probationary teacher may, after a period of not less than one or more than three years of service as such, be appointed as a permanent or regular teacher in the position upon the recommendation of the board of superintendents. We recommend that the probationary teacher, when he can be promoted to the position of a regular teacher in the same subject, present evidence of two years of satisfactory teaching experience in his subject in the New York schools.

Attention is called to the fact that under this plan while any applicant from outside New York can meet the requirements for the probationary teacher, it will be necessary, whatever may be his previous trade and teaching experience, to serve two years as a probationary teacher of his subject in the New York schools before becoming a regular teacher. We believe this plan to be good as a means of obtaining and promoting good teachers if the salary schedule for the probationary teacher be made such as will make the work of a beginner desirable to promising men from outside as well as inside Greater New York.

In the case of women teachers, we recommend that the probationary teacher who began with a minimum of two years of trade experience, as what is known as a substitute or probationary junior teacher, be, after one year of satisfactory experience as a teacher of a trade subject, promoted to be a probationary second assistant; after a second year of such service, to be a probationary first assistant; and after a third year of such service to be a regular teacher of the subject.

The Probationary Teacher of Related Technical Subjects: The applicant should at least have a high school education or its equivalent. He should have, in addition as a minimum, 300 hours of additional instruction in the technical subject he desires to teach, or an experience in the subject accepted as an equivalent, or an equivalent in preparation and experience. In order that he may be able to apply his subject to the trade or occupation to which it is related, he should have had at least one year of actual experience in the trade or occupation concerned or one year of approved practical contact in some capacity with the trade or occupation.

Regular Teachers of Related Technical Subjects: As in the case of shop subjects, the probationary teacher of a related technical subject should after two years' satisfactory service be promoted to the position of a regular teacher in the same position.

Probationary Teachers of Non-Vocational Subjects. These positions are difficult to fill. At present they are obtained by transferring elementary school teachers.

Teachers of non-vocational subjects in an industrial school enter a field where few precedents exist. The vocational aim of the school demands a concrete and practical presentation of the non-vocational subjects such as is not common in our regular schools. Teachers of these subjects cannot expect to use in the industrial school the same subject matter or exactly the same methods commonly employed in the high school. They must be able to draw their material for the teaching of civics, economics, industrial history and English, from the work of the world. To do this, successfully, they do not need to have actual trade experience, desirable as such experience is, but they do need a layman's knowledge of the machines used and the trade processes taught in the school. They ought also to have a keen appreciation of the conditions and problems of modern industry and a sympathetic insight into the needs of the workers. A man or woman with some natural mechanical ability and interest in industry, is more likely to succeed in such work than one whose tastes are entirely academic.

The general education, personal qualifications and teaching equipment of teachers of non-vocational subjects should at least be equal to those of technical teachers.

Regular Teachers of Non-Vocational Subjects: These should be obtained by promoting the probationary teacher of such a subject after two years of satisfactory service.

Teachers of Industrial Evening Schools: All the foregoing applies only to teachers of regular day vocational schools. We do not see our way clear to recommend at this time the formal certification of teachers of evening industrial schools. It is altogether likely that the attempt to do this would not only interfere with the prompt employment of such instructors when needed but prevent the schools from securing some very competent teachers who now teach as an incident to their regular business.

The committee, however, desire to point out certain things which need to be taken into consideration in establishing standards for the employment of instructors in evening classes.

The qualifications of trade teachers for day industrial schools outlined above are equally desirable for trade teachers in the evening schools. In the case of these teachers, however, there are certain reasons why these standards must be slightly modified. For some time to come the trade teaching in the evening industrial school will probably have to be done by men and women who regard this work as incidental to their regular business. The short term of evening employment and the comparatively small wage make this inevitable. Instructors from the all-day industrial schools will constitute a small number of these teachers but the majority must be secured from the local industries. To persuade competent men and women in industry to undertake a teaching job in addition to their day's work is already sufficiently difficult. For this reason the qualifications of trade teachers, and especially those who are employed for short periods on special work, should be limited to only the most essential requirements.

The function of the evening industrial school is to give the worker an opportunity to secure further knowledge of his trade. It should deal for the most part with men and women who are presumed to have some knowledge of the trade in which they wish instruction. The prime requisite of evening trade teachers is, therefore, a thorough knowledge of their trade, or, in special instances, the specific branch of it they may be engaged to teach. Their skill, technical knowledge and trade standing must be such as will give them prestige in the eyes of their pupils. It is necessary that they have sufficient teaching ability to organize their subject matter and present it convincingly to their classes. They should have at least sufficient elementary school training to enable them to speak and write ordinary English. A good personality and ability to deal with men and women are also important assets.

(Signed) C. A. Prosser
Arthur D. Dean
Samuel S. Edmands

DAY VOCATIONAL SCHOOLS

The Board of Education has established four day vocational schools to train boys and girls to enter industry. Of these four, the Boys' Vocational School was opened in September, 1909. A year later the Manhattan Trade School for Girls, up to that time a private philanthropic institution, was taken over by the Board of Education. The Murray Hill Vocational School for Boys and the Brooklyn Vocational School for Boys were opened in March, 1914, and June, 1915, respectively. In the three vocational schools for boys electric wiring, drafting, printing, woodwork, machine shop practice, plumbing, sheet metal, sign painting, modeling, commercial and garment design are the trades offered. The first four listed are taught in all three schools and the last three are taught in only one school. One third of all the boys registered in the three schools are studying electric wiring and ninety percent of all of the boys are in the four trade courses of electric wiring, machine shop practice, drafting and printing. In the Manhattan Trade School for Girls seventy percent of the girls are learning dressmaking. The remaining thirty percent are divided between machine operating, millinery, novelty and sample mounting. During the year 1915, a total of over $190,000 was expended by the Board of Education for these four schools. The purpose of the survey has been to determine how well each school is equipped to furnish efficient trade instruction; how well each is meeting the demands made upon it and in the light of the experience of these four schools what changes or extensions, if any, are desirable to be made. So far as it has been possible the investigation has been kept to things that could be measured objectively, the expression of mere personal opinion has been avoided, and due allowance has been made for conditions which have been temporary in their nature.

BOYS' VOCATIONAL SCHOOL

The first public Vocational School for Boys established in the City of New York is located on 138th Street, Manhattan, and was opened on September 8th, 1909.

In the 1910 report of the city superintendent of schools is given an account of the opening of this school and the policy which the Board of Education adopted in regard to the pupils for whom the school was provided: "There remained, however, the opportunity to do something for that enormous class of children who leave school at fourteen years of age, though still far from completing the elementary school course, and who have been going out and are still going out into life with no adequate preparation for its work and its trials. In establishing the Vocational School for Boys a direct attempt has been made to provide suitable training for this very class. The terms of admission to the school are that a boy shall have reached the age of fourteen years and shall be able to pass an examination not more difficult than that required to obtain an employment certificate."

Trade Subjects: During this first year instruction was offered in the following trade courses:—

1. Woodwork, which included house carpentry, cabinet making, wood trimming, pattern making and the use of wood milling machinery.
2. Metal work, including machine shop practice, sheet metal work, forging, plumbing and electric wiring and installation.
3. Printing, including composition and press work.
4. Bookbinding.
5. Drawing, including mechanical, freehand, industrial design and the making and reading of blue prints.

In 1911 a class in architectural drawing was started; in 1913 four new activities—automobile repairing, cornice and sheet metal work, tile laying and plaster modeling, were added. The new trades added in 1914 were linotype operating and sign painting, and in 1914 an instructor in monotype operating was added. During 1916 the class in tile laying, which from the first had been very small, was discontinued.

Classification of Pupils for the Several Trades: The report of this school for the year 1913-1914 stated that "Upon entering, a pupil selects the trade he wishes to study. If there be no obvious reason for disagreeing with the pupil's choice he is permitted to follow his bent. Subsequently, it may be advisable, or necessary, for him to make a change in his work. Provision is made for such a contingency."

In March, 1917, the monthly report of this school gave the distribution of the boys for the several trade groups as follows:

Machine shop practice	224
Electric wiring	220
Architectural drawing	66
Printing	52
Commercial design	40
Mechanical drawing	29
Wood turning	10
Plumbing	9
Sheet metal	9
Woodwork	9
Modeling	7

Holding Power of the School: A table is given below which shows the total number of pupils registered each year in this school since it was first opened and the average daily attendance for each of these years. This table shows that in general the average daily attendance each year since the school was opened has been about half as large as the total enrollment for that year.

	Total enrollment for the year	Average daily attendance
1909-10	...	109
1910-11	821	266
1911-12	821	421
1912-13	892	427
1913-14	1047	557
1914-15	1274	662
1915-16	1279	672

There are many difficulties of organization connected with a school that has a yearly enrollment so much larger than the daily attendance unless the class sections are kept so small that individual work can be done in each class. If this cannot be done, those who enter late must either be put in classes with pupils who have been in school from the opening of the term, or new classes must be formed for their benefit.

The number of admissions and discharges month by month for the last two years is given in the table following:

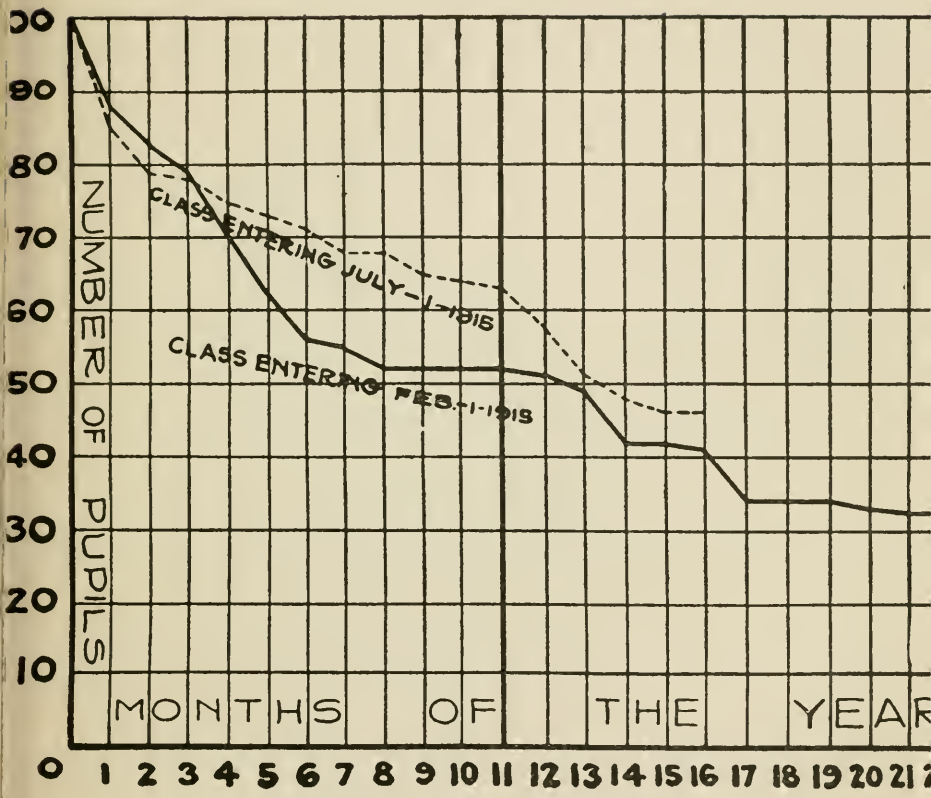
	Admissions	Discharges	Graduates	Admissions	Discharges	Graduates
	1915			1916		
January	38	18	0	30	63	0
February	191	40	0	204	38	2
March	40	52	6	28	70	15
April	24	69	11	13	47	13
May.....	18	91	2	11	41	6
June	42	52	0	10	63	15
July	89	0	0	82	25	1
September	211	55	17	73	18	4
October	53	155	5	43	52	1
November	24	91	11	20	140	23
December	7	21	2	11	34	9
Total	757	644	54	525	591	89

In order to determine just how long a boy who entered the school was likely to remain after he entered, a study was made of the attendance of the first hundred boys registered in the admission book on February 1st, 1915, and the first hundred boys registered July 1st of that same year, February and July being the months when the largest groups of pupils enter. Ninety percent of each group were elementary school graduates, five percent had finished only the sixth grade and the remaining five percent were either in the seventh or eighth grade when they entered the vocational school. As shown on Chart 6, page 65 at the end of the fourth month, 70 of the February group and 75 of the July group were still in the school. During the next two months the February group of one hundred lost fourteen as compared to a loss of only four from the July class. In each study of this kind that was made in each of the vocational schools the loss of pupils during the first summer was very much greater than during an equal number of months at any other time.

At the end of the first year 52 of the February hundred and 63 of the July hundred were still in the school. At the end of the two-year period for the February group, 32 of the hundred boys were still in school ready for placement in industry. The July group had 46 of the original number in school at the end of the 16th month.

The tendency in recent years in all four of the vocational schools has been to discourage the entrance of "That enormous class of children who leave school at fourteen years of age though still far from completing the elementary school course," and limit the attendance to those who are elementary school graduates.

CHART 6.



BOYS VOCATIONAL SCHOOL

This chart shows the enrollment month by month of two groups of one hundred pupils each who entered the Boys Vocational School February 1st, 1915, and July 1st, 1915. It reads as follows: Of the class of 100 entering February 1st, 88 remained more than one month, 83 remained more than two months, 79 remained more than three months, etc.

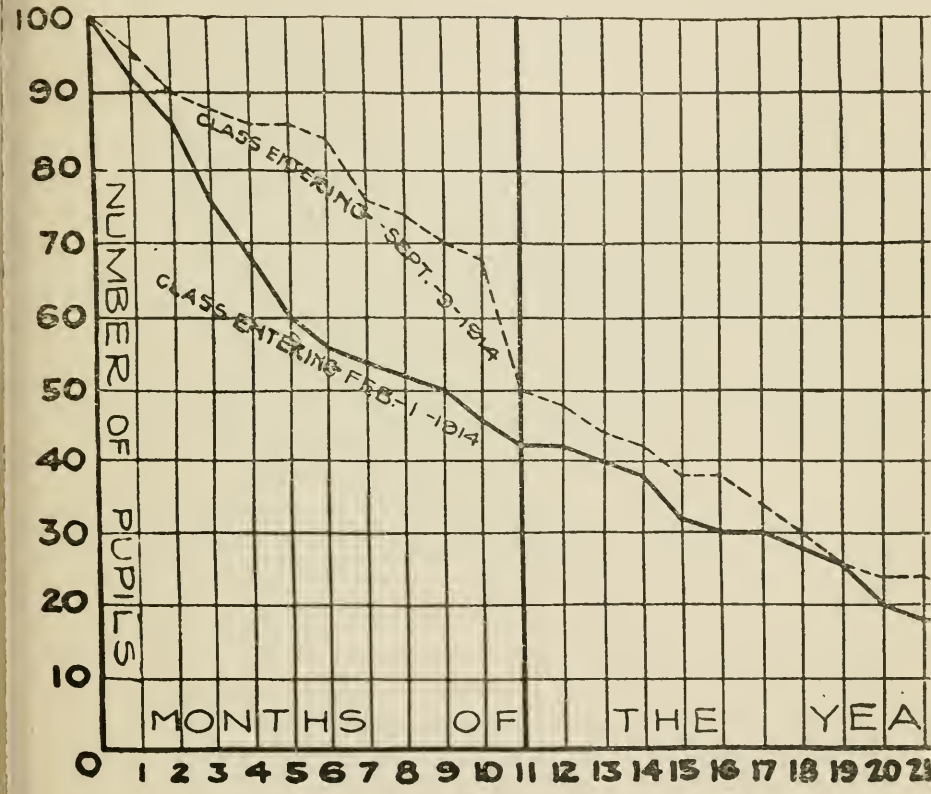
For this reason a study was made of the record of two groups of boys who entered this school after finishing the sixth grade only of the elementary school. It was necessary to go back to the year 1914 to find enough boys of this class entering in any one month to make a large enough group to study.

For the first year the sixth grade boys remained in the school about as well as the group made up of boys, 90 percent of whom were eighth grade graduates, but a much smaller number remained to the end of the two year course. The vacation period, especially for the class entering in February, marked a large falling off in attendance. Whether this was due to the fact that the work was arranged for boys who had finished the elementary school and so was too difficult for those who had only finished the sixth grade or due to other causes we have no means of knowing. Chart No. 7 on page 67 gives the record month by month for each of these groups.

Size of Classes: The Boys' Vocational School is the only one of the four day vocational schools that has not filled the position of teachers of non-vocational subjects with teachers who have been transferred from the elementary school. By a rule of the Board of Education, if elementary school teachers are transferred their hours are not increased from the five hour day of the elementary school to the seven hour day of the vocational school, but their salary is increased $200 over the salary received in the elementary school. When the teachers transferred from the elementary school to the vocational school have been near the top of the salary schedule (and most of them have been) the short hours and high salary have forced the school to make the academic classes large in order to keep the per capita-per-hour cost within reasonable limits.

In this school the teachers of academic subjects are employed the same number of hours a day as the trade teachers and in general their classes are no larger than the shop classes. So it is possible so far as the size of the class is concerned, to have the academic instruction as individual in character as in the trade classes. Seventy-five per cent of all the classes at the time of the survey had a registration of between 18 and 22 pupils to the class. In the academic work only two classes of over 35 pupils were noted and the smallest class had 16 enrolled. The small registration in modeling, plumbing, sheet metal, woodwork and wood turning (each having less than ten pupils) has made it necessary to have many small classes in these trade courses.

CHART 7.



BOYS' VOCATIONAL SCHOOL

This chart gives the same data described above for two groups of boys who entered the Boys Vocational School, having completed the sixth grade of the elementary school. It reads as follows: Of the class of 100 entering February 1st, 1914, 92 remained more than one month, 86 remained more than two months, etc.

Courses of Study: The members of the survey staff were unable to secure any courses of study in this school either for the academic courses or the trade courses. The reason was given that the instruction was largely individual in its nature and a course of study would be a hindrance rather than a benefit. Only two of the young men teaching academic courses had had any trade training and but two had more than a year of public school teaching experience before being assigned to work in this school.

Each of the teachers, who was asked about a course of study, stated that on undertaking the work of teaching in this school he had found no course, or outline, that had been used by the previous teacher and that the outline he was following was one he had made himself. Many of the teachers interviewed expressed the need of help in organizing their teaching material so as to be of most benefit to the boys of each trade group.

In February, the superintendent in charge of vocational activities was told of the difficulties in securing these courses and on May 18th mailed the director of the survey courses of study in automobile work and gas engine mechanics, business English and industrial history including the municipal activities of the City of New York and the industries of New York City.

The Relation Between Academic and Trade Instruction: In spite of the fact that the academic classes were kept almost as small as the shop classes, only two trade courses, electric wiring and machine shop practice, enrolled enough pupils to make it possible to have only the boys of the same term of the same trade in the one class.

The program of each academic teacher is such as to require that he spend two periods each day in some one of the shops in order that he may see what the boys are actually doing in their work.

Time was not available to determine definitely just how efficiently the teachers of these mixed classes were able to carry out group instruction in such a manner as to correlate the academic work with the trade work. One science class noted was made up of first, third and fourth term boys in architectural drawing and boys from all four terms in plumbing. The first term architects were studying forces while the third and fourth term architects were determining heat calories. The first and second term plumbers were studying the action of pumps and the third and fourth term plumbers were learning the properties of acids. In

an English class made up of boys from the third and fourth term of electric wiring, the pupils spent the period copying the form for a postal money order into their note books. In another English class visited, one boy was reading aloud from a book on contracts and after each paragraph was read the class was quizzed as to its meaning. The teachers of trade mathematics have had several years of trade experience as well as teaching experience and there semed to be a much closer correlation between the shop work and mathematics than in the teaching of any other of the subjects observed in the school.

Organization of Shop Courses: The organization of the shop courses in this school is different from that in the Murray Hill and the Brooklyn Vocational School. A brief description of the organization of the work in each department follows:

In the printing department, the boy spends the first year and a half in the composing room and the press room and a short period in the bookbinding room. At the end of that period of time, he is allowed to specialize in hand composition, press work, linotype operating, monotype operating, or stone work. The boy in this department spends twenty-three hours a week in the shop, while the boy registered in other departments spends twenty hours a week in shop work. The boy in the printing department has work in English for five periods, in drawing three periods, and in science two periods a week, while the boy in the other trade departments has work in English for three periods, in drawing six periods and in science three periods a week.

The work in the electrical department is divided into five divisions, as follows: (1) bell, communicator and burglar alarm, (2) telephone, (3) light wiring, (4) motors (dynamo and generator) and storage batteries, and (5) flash sign operating.

A boy in this department spends a term in each of the first three divisions, half a term in the fourth division and also a half term in the fifth division. First term boys spend three periods a week in the wood shop and third and fourth term boys spend two periods a week in the plumbing shop, wiping joints and splicing for lead and case work.

The boy who enters the machine department spends three-sevenths of his shop time for the first term in the machine shop, two-sevenths of his shop time in the forge shop and the remainder of his time is equally divided between the sheet metal shop and pattern making. During the second term he spends four-sevenths

of his time in the machine shop and three-sevenths of his time in the forge shop. The second year he is allowed to specialize in machine shop work or auto-machine work.

The work in the woodworking department is divided into three divisions: cabinet making, house construction and mill work. The boy spends one-third of his time in each of the three shops. The student in the pattern making department devotes his entire shop time for the two years to the work in wood turning and pattern making. The boy studying plumbing spends his entire shop time for the two years in the plumbing shop.

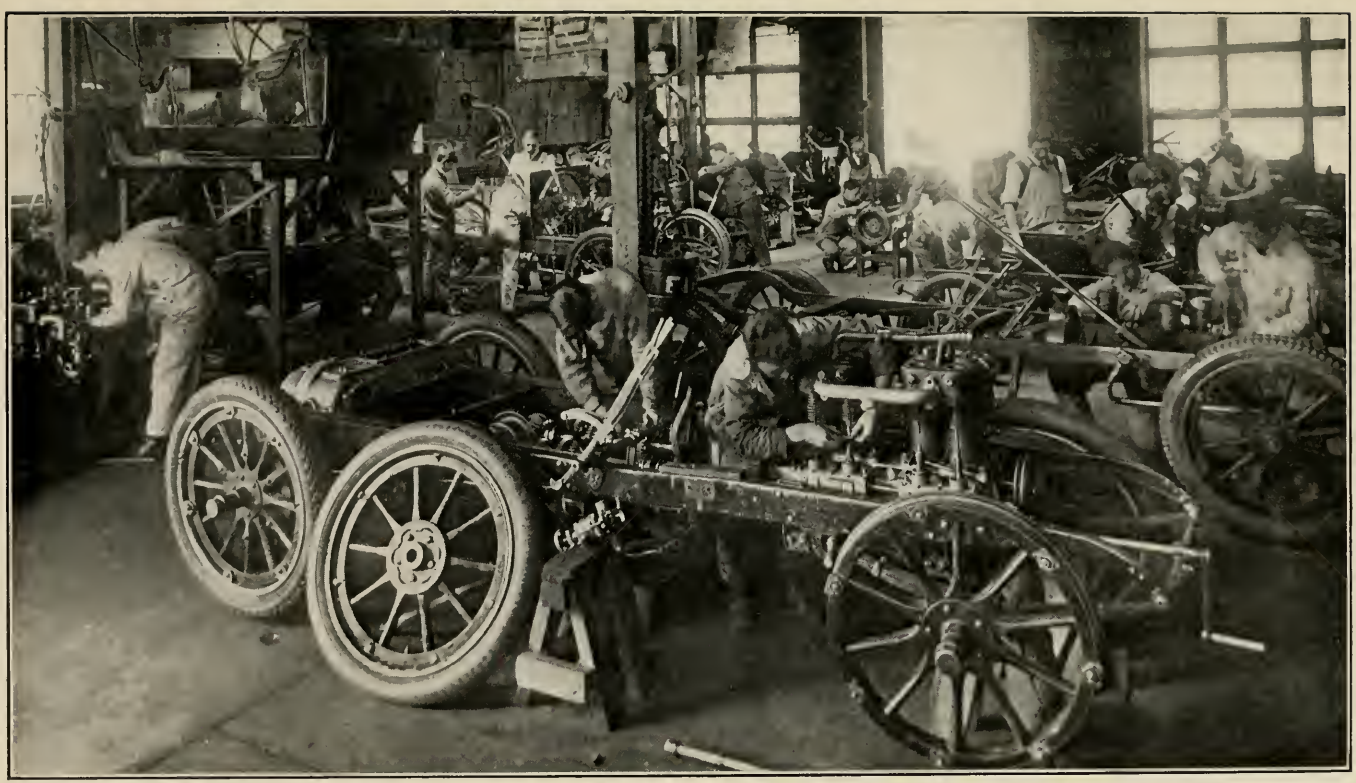
The student in the architectural drafting department gives twelve periods a week to the drawing room, two periods to clay modeling, three periods to electrical work, three periods to plumbing and four periods to woodworking, two periods to sign painting and the remainder of his time to academic work. The boy specializing in mechanical drawing spends fourteen periods a week in the drafting room and twelve periods a week in the machine shop, auto-machine shop, the sheet metal shop, the press room, and the remaining fourteen periods in academic work.

The distribution in the different trade subjects of the forty periods into which each week is divided is shown in the accompanying table:

	Printing	Electrical	Sheet Metal	Machine Shop	Plumbing	Woodwork	Pattern Making	Architectural Drawing	Mechanical Drawing
Shop Work.....	23	20	20	20	20	20	20	14	12
Drawing	3	6	6	6	6	6	6	12	14
Mathematics	3	3	3	3	3	3	3	3	3
English	5	3	3	3	3	3	3	3	3
Science	2	3	3	3	3	3	3	3	3
History	1	1	1	1	1	1	1	1	1
Physical Training...	3	3	3	3	3	3	3	3	3
Study	0	1	1	1	1	1	1	1	1

Character of the Instruction (Shop): There is a great difference in the character of the instruction in the various departments. In the printing, woodworking and sheet metal departments considerable commercial work is produced, while in the other departments practically all of the work, outside of repairs for the school and the equipment, consists of exercises.

The work of the printing department, where six shop teachers



AUTOMOBILE DEPARTMENT—VOCATIONAL SCHOOL FOR BOYS

are engaged and fifty-two boys enrolled, consists largely of printing forms, blanks and circulars for the Board of Education. The value of the product of this department amounts to about $1,000 a month. The fourth term boys are allowed to specialize in linotype, or monotype operating. It may be noted that to allow boys of such limited composing room experience to specialize on machine composition is contrary to the established practice in the trade where boys are not allowed to work on machines until the fifth, or probationary year, and in the schools maintained by the manufacturers of type-setting machines the attendance is usually limited to those who have considerable trade experience.

Outside of the necessary electrical repairs for the school building and its equipment, the work in the electrical department consists largely of exercises. The number of pupils enrolled in this department makes it possible to secure a careful classification and grading of the pupils and permits the school to secure specially trained men to teach the different branches of the trade.

In the auto-machine shop the boys secure a very thorough training in the overhauling and repairing of many different types of cars. In the regular machine shop the work consists largely of exercises in classes that are so large that two boys are assigned to each machine or bench job. The machines are driven by alternating current motors with which it is difficult to secure a variable speed control which is desirable for this kind of work.

In the sheet metal shop the boy spends part of his time making supplies for the Board of Education and a part of his time in developing problems in sheet metal work. The correlated drawing is taught in the shop and consists of making full scale drawings for the shop projects. In the plumbing department the time is about equally divided between lead work and the installation of fixtures. The boys also spend some time in pipe fitting. The plumbing repair work in the building is done by the boys of this department.

The work in the other departments is largely individual instruction. The classes are small and the teachers can give each boy considerable attention. The drawing for the boys specializing in the different trades does not seem to be closely correlated with the shop work. In several of the trade departments, the shop men teaching the drawing necessary for the working out of the shop problems and in such cases it was much more closely corre-

lated with the work of the trade than when the drawing was taught by the regular teachers of drafting.

The Teaching Staff: The rules of the Board of Education concerning the teachers in the vocational schools have been subjected to several changes taking place while this survey was being made. The salary schedule for regular teachers of vocational subjects in vocational schools for boys grants $1,500 for the first year with an annual increase of $125 until a maximum of $2,500 is reached. Teachers assigned by the board of superintendents from the elementary school where the maximum salary is $2,400 to teach non-vocational subjects (English, history and geography) in a vocational or trade school receive $200 a year as additional compensation. The substitute teachers of vocational subjects in these schools are given $5.00 a day and the substitute teachers of the non-vocational subjects receive $0.60 an hour.

At the time of making the survey there were 17 regular teachers and 31 substitute teachers in this school. Of the 17 regular teachers, 12 were teachers of shop courses, three were teachers of trade mathematics and two taught mechanical drawing. Of these 17 regular teachers, 14 had been teaching in this school for four or more years.

This continuity of service is not found, however, among the substitute teachers who make up two-thirds of the teaching force. In the printing shop nine different men served as substitute teachers during the two years of 1915 and 1916. Only one of these men taught all of both years. There were ten substitute teachers of electric wiring during the same two years, only three of whom taught the two years. There were four substitute teachers of tile laying during these two years, three different men in 1916 with terms of service ranging from a single month to six months, although there were no pupils reported for this trade any month of the entire year. During the year of 1916 two substitute teachers were employed to teach sign painting (one from March to December, the other from May to December), although the monthly report of the school gave no pupils registered for this trade for any one of these months.

English is taught by substitute teachers who have changed so frequently that of the seven different men employed since January, 1915, to teach this subject only two have been there continuously for the two years. Eight different men have acted

CLASS IN MACHINE SHOP WORK—VOCATIONAL SCHOOL FOR BOYS

as substitute teachers of drawing, not one remaining the full two years. Only one of the substitute science teachers and but one of the teachers of history was in the school two years ago.

The teachers of academic subjects as well as the teachers of trade subjects in this school are employed seven hours a day and eleven months a year.

Building: The Boys' Vocational School is located in the largest building devoted exclusively to vocational work in the city. The building, originally a 48-room high school annex, is a six-story brick and stone structure. The students have made many alterations in the building, such as removing partitions, changing the lighting fixtures, laying floors, as well as plastering and painting. As a result of these alterations, the shops with one or two exceptions, are located in large, well lighted and well ventilated rooms.

The boys and teachers of this school also planned and erected a large fireproof auto-machine shop on an adjoining vacant lot. This shop is about 70 x 80 feet and is large enough to house fifteen automobiles and the necessary machines for repair work.

Equipment: The Board of Education has expended $63,797 for the equipment in this school. It is impossible to give in this limited report a list of all the equipment, but the following brief statement of the types of machines and tools provided for the printing department, automobile shop and the machine shop will give a general idea of its scope.

In the printing department are several job presses, a cylinder press, power paper cutter, six linotypes, one monotype and the necessary composing room furniture.

In the automobile shop are thirteen foreign and domestic automobiles of various types, two lathes and the necessary bench and hand tools.

The equipment in the machine shop consists of nine engine lathes, three large drill presses, four spindle drills, one hand milling machine, one plane milling machine, one planer, two shapers, one universal grinder, three speed lathes and tool grinders and the necessary tool and bench equipment. These machines are driven by alternating current motors with which it is difficult to secure variable speed control.

Records and Reports: The usual school records in regard to attendance and progress of the pupils are kept in this school.

Each teacher of the school is assigned a certain number of pupils with whose home conditions he becomes familiar and no boy who leaves the school is marked discharged until his teacher reports upon why he is leaving and whether he intends to return. Since it takes considerable time for the teachers to secure this information, (all of which must be done outside of school hours and without any extra compensation) many boys are kept on the register for days and weeks after they have left school.

As was shown in the section dealing with the holding power of the school, some of the pupils who entered in February and July left the school the same month they entered. Month by month others dropped out while some remained to the end of the two-year course. Of these four groups presented graphically in Charts No. 6 and No. 7, the attendance record of the first fifty of each group that left school was checked to determine the difference between the last day each boy was in school and the date that he was discharged and his name taken off the register.

The record for one of these groups of fifty boys is tabulated below:

Total number of months of actual attendance of the 50 boys	172
Total number of months on the register for the 50 boys	301
Average number of months of actual attendance for each boy	3.4
Average number of months each boy's name was on the register	6
Discharged in less than one month after leaving	3
Discharged between one and two months after leaving	7
Discharged between two and three months after leaving	23
Discharged between three and four months after leaving	7
Discharged between four and five months after leaving	6
Discharged between five and six months after leaving	2
Discharged between six and seven months after leaving	2

Seven of the fifty boys did not return to the school at all after the first day in which they enrolled. It took two months to get three of these names off of the register during which time they were counted as members of the school. A month later another of the seven was marked discharged, two more were discharged the next month and one was discharged five months after he had left the school. The most extreme case found in any one of the four groups studied was that of a boy who was marked present on his report card on 18 days and marked absent on 332 days. Although he was actually in school less than an average month he was counted as a member of the school for a year and a half.

In the other vocational schools the pupils' names were kept on the register not more than a few days after they left school.

Analysis of Costs: There are so many different methods of determining school costs because of the many different factors to be considered that it is difficult to make any statement regarding the costs of instruction that is not open to criticism. The financial report of the Board of Education shows the annual per capita costs for the past five years of the Boys' Vocational School to be as given in the table below:

INSTRUCTION COSTS—BOYS' VOCATIONAL SCHOOL

Year	Total Cost	Average Daily Attendance	Cost Per Capita	Net Cost Per Capita
1911	$31,403.08	327	96.03	90.81
1912	36,196.67	416	87.01	76.91
1913	41,079.98	475	86.48	73.57
1914	62,780.19	608	103.25	80.15
1915	70,001.84	676	103.55	72.68

The difference between the cost per capita and the net cost per capita is due to the allowance by valuation that is made for the manufactured product that is used within the school system.

While the gross cost per capita has increased $17.07 above what it was the year the cost was the lowest, the net per capita cost has decreased $18.13 from that of the year it was the highest. The annual per capita cost for the high schools of New York City for the year 1915 was $100.68.

The annual financial report also gives the cost on what is called a per capita-per-hour basis which is the average cost for each of the aggregate hours of instruction in the school. The gross and net per capita-per-hour cost for this school for the past five years, compared with the per capita-per-hour cost for the elementary schools for the same period is given in the following table:

Year	Gross Per Capita-Per Hour	Net Cost Per Capita-Per Hour	Net Cost Per Capita-Per Hour for Elementary School
1911	.066	.062	.037
1912	.057	.051	.043
1913	.057	.047	.044
1914	.069	.053	.046
1915	.071	.05	.045

The net per capita-per-hour costs are susceptible of comparison with the other schools and with other types of educational activities, which is not true of the annual per capita cost.

In order to show the relation between the over head expense, the cost of instruction in the non-vocational subjects and in the trade subjects, a table is given below showing these costs distributed on a per capita-per-hour basis. It will be noted that the cost of the non-vocational work increased greatly each year. This was due to the fact that the associate superintendent at present in charge of vocational activities desired that the academic instruction in this school should be emphasized more strongly than it had been before he took charge of the vocational work.

PER CAPITA-PER-HOUR CASH DISTRIBUTION FOR SALARIES ONLY

Year	Other Than Teachers	Teachers of Non-vocational Subjects	Teachers of Vocational Subjects	Total Per-Capita-Per Hour for Salaries
1914	.0057	.0034	.0401	.0492
1915	.005	.0051	.0492	.0593
1916	.0057	.0129	.0495	.0681

The data are not available from which it would be possible to make an accurate distribution of the costs of the various items which go to make up the annual per capita costs of $103.55 but in round numbers the chief items would be about as follows: trade instruction, $57.00; academic instruction, $20.00; supplies, $17.00; supervision of the principal, $6.00. This leaves $3.55 not covered by these five items.

There is also much difference in the cost for the several trades in which instruction is offered. Woodwork, which includes carpentry, pattern making and the use of wood milling machinery, has had an average monthly register since last July of 25 boys. The cost for salaries of the three trade teachers of woodwork is $5,875. Printing, including bookbinding, linotype and monotype instruction as well as composition and press work, has had since last July an average of 53 boys enrolled in the department. The cost for salaries of the six teachers who give all of their time to the boys registered for printing is $8,000. The average registration in plumbing was 14 boys. Nine boys on the average were registered for the course in modeling, ten for sheet metal and none at all for sign painting and yet a trade teacher is employed

for each of these groups. The annual per capita cost is kept as low as it is (1) because two trades, electric wiring and machine shop practice, have an average monthly register of over 200 pupils in each trade and the lower cost of trade instruction in these two trades brings down the average for them all, and (2) because some of the trade teachers, as in woodwork, plumbing, sheet metal, sign painting, and modeling devote part of their time to teaching boys from other trade groups.

SUMMARY:

1. Only architectural drawing, electric wiring, machine shop practice and commercial design register more than thirty pupils for each course. Modeling, plumbing and sheet metal were taught with less than a dozen pupils for each trade.
2. The Boys' Vocational School holds a larger percentage of the pupils to the end of the two-year course than is the case in the other vocational schools.
3. Neither the shop classes nor the academic classes were too large for efficient trade teaching.
4. Few of the teachers were following a definite course of study and as a rule a new teacher made up his own course with little help from his superiors or his predecessors.
5. Two-thirds of the teachers in the school were on the substitute list at $5.00 a day. The substitute teachers in the school both of trade and acadamic subjects changed so frequently that less than 20 per cent. remained as long as two years, and 40 per cent. remained less than six months.
6. With this constant change of teachers there was little correlation between the academic and trade subjects.
7. The daily register of pupils was much larger than the attendance as pupils' names were kept on the records two to three months after they had left the school.
8. The small enrollment in over half of the trade courses offered has greatly increased the cost of trade instruction.

MURRAY HILL VOCATIONAL SCHOOL

Location: The Murray Hill Vocational School, which was opened March 31, 1914, is located on 37th and 38th streets. The school is within a few minutes' walk of the subway, the 2nd Avenue elevated and the 3rd Avenue elevated.

Classification of Pupils for the Several Trades: In this school the choice of the boy is almost always the deciding factor as to the trade to be studied. A boy who enters a vocational school

usually does so because he has made up his mind that he wants to learn a certain trade, and if there is room in that department, he is given a chance to see how closely anticipation and realization are correlated. If he shows "exceptional proficiency in the first trade chosen, he is permitted to confine his work to that trade," otherwise he selects different trades from different distinct trade groups until he finds the trade where he can do the most satisfactory work.

The trade subjects offered in this school as given in the 1914-15 annual report and the distribution of the students in the several trade subjects for the month of March, 1917, as stated in the principal's monthly report to the superintendent, are given in the table below:

1. Wood work—14
    1. Joinery
    2. Cabinet making and finishing
    3. House carpentry
2. Metal Work—99
    1. Plumbing and gas fitting—34
    2. Automobile repair—65
3. Electrical work—103
    1. Electric wiring installation—103
    2. Instrument making
    3. Electrical signs
    4. Electro-plating
4. Drafting—62
    1. Mechanical drawing—58
    2. Architectural drawing—4
    3. Making and reading blue prints
5. Advertising—9
    1. Sign painting—9
    2. Display and show cards
6. Printing—39
    1. Composition
    2. Imposition
    3. Press work
    4. Proofreading

Holding Power of the School: The school report for the year 1914-1915 shows an average daily register for the year of 209 pupils, an average daily attendance of 180, a percentage of attendance of 86. For the year 1915-1916, the corresponding figures were 237 register, 217 attendance, or a percentage of 91.5. It is possible to conceive of a school with an enrollment of one hundred pupils that discharged five pupils and admits five new pupils each school day. At the end of the month, although all of the original hundred pupils had left, the school would have an average daily attendance of one hundred and consequently the school could show an attendance record of one hundred per cent. It is also possible to conceive a school with an enrollment of one hundred pupils, each one of the hundred attending every day for the month. This school that lost no pupils and gained none would also have an attendance record of one hundred per cent. At the end of a school year of ten months our first school would have

MURRAY HILL VOCATIONAL SCHOOLS—BUILDINGS AT LEFT SHOW POOR HOUSING FACILITIES PROVIDED FOR THIS SCHOOL

registered one thousand different pupils each for only a month's instruction, although the attendance record would still be perfect. The second school that kept its original hundred in daily attendance for a year would have given a year's instruction to each one of the hundred while keeping its attendance record at one hundred per cent. In other words, the holding power of the school cannot be determined simply by figures showing percentage of attendance. The constant procession of boys entering and leaving this school is clearly shown by the number of admissions and discharges month by month and is given in the table below:

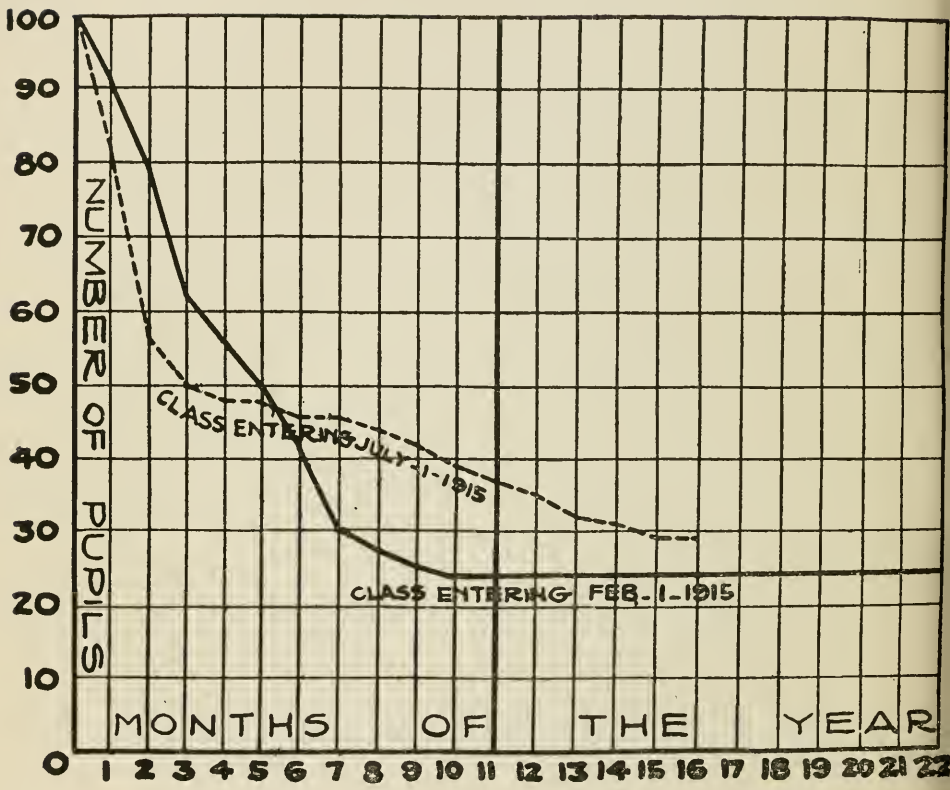
	1915		1916	
	Admissions	Discharges	Admissions	Discharges
January	11	10	2	6
February	136	25	102	24
March	22	21	11	23
April	6	25	5	35
May	11	23	24	32
June	6	63*	6	24
July	81	28	52	29
September	44	54	44	19
October	17	31	39	52
November	9	15	16	17
December	2	3	2	16
TOTAL	345	298	303	277

The holding power of a school may be determined by taking the records of each pupil who enrolled as a student and finding out how long he attended or where this is impractical because of the large number of pupils enrolled, by taking a representative group of pupils who enter the school and seeing how long each one of the group remains. Both methods were used in this school. The Murray Hill School receives the largest increases during the months of February and July, respectively. The attendance records of the first hundred pupils registered in the admission book for February, 1915, and also for July, 1915, were tabulated. Of the July group half of the hundred had left school at the end of the first three months, while of the February group one-half were gone at the end of June and two-thirds of them had quit before the end of July.

Chart No. 8 shows the number remaining each month out of the first hundred pupils who entered the school for the months

*58 pupils sent to the Brooklyn Vocational School.
46 graduates included in discharges up to July, 1916.

CHART 8



MURRAY HILL VOCATIONAL SCHOOL

This chart shows the enrollment month by month of groups of one hundred pupils each that entered this school in February and July, 1915. It reads as follows: Of the class entering July 1, 1915, 82 remained more than one month, 57 remained more than two months.

studied. The total enrollment of the Murray Hill Vocational School from the time it was opened under the control of the Board of Education to February 1, 1915, was 396 pupils. Of this number 58 were registered as members of the Brooklyn Vocational School and were transferred to that school when it was organized in June, 1915. This leaves 338 pupils as the register of the Murray Hill School up to February 1, 1915. Of this number 89 completed the course and graduated some time between February 1, 1915, and February 1, 1917, or 26.3 per cent. It is interesting to note that there is only about two per cent. difference between the records of the two groups of one hundred pupils and the record of all the pupils who entered the school.

Attendance of Pupils: A study of the attendance of these same two groups of pupils shows that one-third of the pupils who remained more than a month in the school had a perfect record for attendance. An additional third averaged 17 or more days attendance for each month they were in the school, while the third that were poorest in attendance were present about two-thirds of the time.

Progress of Pupils: Regularity of attendance and a correct attitude toward his work in the shop and class room are the chief standards set up by the school for measuring the progress of the pupils. Since the seven-hour day provides time for study, recitation and shop work and the teachers of the academic subjects are all skilled, experienced teachers there is little need for formal examinations to determine how well a pupil is doing his work.

Size of Classes: The daily programs which the teachers of this school made out for the survey staff show a wide range in the size of the classes. The smallest was in sign painting where for eleven periods a week an instructor gave lessons to one pupil, the only member of the class. To give this pupil instruction for three hours a day, the cost for the teacher's salary alone is a little over $8.50 a week.

The largest classes were in non-vocational subjects. An English class of 50 pupils, a geography class of 47, a science class of 46 were the largest sections noted in the school. The classes in mechanical drawing ranged in size from 7 pupils to 37; in electric wiring from 10 to 39 pupils; in English from 10 to 50 pupils; mathematics from 11 to 42; sign painting from 1 to 18;

printing from 9 to 17. The greatest difference in the size of the several sections is due to the great difference in the number of boys registered for each trade subject. While the school had an average daily register in 1915-1916 of 106 pupils in electric wiring, the average daily register for the year in sign painting was only 13 and in woodwork only 8. These small trade groups are further divided between the four terms of the course and also divided between shop courses and academic courses. To care for these small groups, without prohibitive cost, either (1) the boys of one trade must be grouped together, irrespective of whether some are just beginning the course and others are just finishing it, or (2) the boys must be classified according to the time they have been in school, thus putting the boys studying several different trades into the same class, or (3) boys of different terms and of different trades are all put together in one section. All of these combinations are found in some of the academic classes.

Course of Study: The members of the survey staff realize that conclusions in regard to teaching methods and the relative value of the subject matter taught cannot be determined by simply visiting the class rooms and trade shops a limited number of times. For this reason an earnest effort was made not only to secure from each teacher the course of study he was following but also to discuss with him his methods and the results he was securing.

The principal refused to give out copies of the courses of study the reason given being that the school had been so recently established that courses were in a state of transition. Some months later the superintendent in charge of vocational activities sent courses of study in all courses except plumbing, woodworking, printing, automobile repairing and science.

Relation Between Academic and Trade Instruction: English, history and geography are considered non-vocational subjects and the courses in these three subjects are general in their nature. Geography and history are taught from an industrial point of view and the aim of the work in English is to give facility in the use of both the spoken and the written language. The literature required to be read included Stevenson's "Treasure Island," Franklin's Autobiography, Irving's "Sketch Book," Poe's "Tales and Poems," Lamb's "Tales," Shakespeare's "As You Like It."

The time allowance for trade mathematics is the same for all trade subjects. Since the amount of mathematics required in

WOODWORKING DEPARTMENT—MURRAY HILL VOCATIONAL SCHOOL

the trade for printers, plumbers and sign painters is slight as compared to the amount of mathematics the electrician and machinist must know, the course for the first group of trade workers is largely general mathematics in order to make it extend over the time devoted to this subject. In general, however, it may be stated the opinion of the survey staff that the trade mathematics is as closely correlated with each trade subject as is possible under such adverse conditions as are necessary by trying to give the boys in all trades the same amount of mathematics and the further difficulty of having boys of different terms and different trades in the same class. The difficulties confronting the teacher of trade mathematics also apply to the teacher in science.

The course of study, giving the amount of time in hours per week that are allotted to each subject taught in the school and showing the amount of time devoted to the trade instruction compared to the amount of time devoted to the academic instruction, is shown in the table which was taken from the 1914-15 annual report of this school.

COURSE OF STUDY FOR TWO YEARS (FOUR TERMS)

Subject	Hours per Week				
	First Term	Second Term	Third Term	Fourth Term	Total Hours
English	3	3	3	4	13
Drawing, Mechanical and Freehand	4	4	4	4	16
Trade Mathematics	2	2	3	3	10
History and Civics	2	2	..	..	4
Industrial Geography	2	..	..	..	2
Applied Science	..	2	3	2	7
Physical Training and Hygiene	1	1	1	1	4
Assembly—Music	1	1	1	1	4
Study: 2 hours—English 2 hours—Mathematics 1 hour—Use of Library	5	5	5	5	20
Total hours academic work per week	20	20	20	20	..
Total hours trade work per week	15	15	15	15	..
Total hours of work per week	35	35	35	35	..

Trade Instruction: The very poor equipment and rooms provided and the fact that a large percentage of the boys leave so soon after they enter the school necessarily influences the character of the trade instruction in the school.

The boys in the wood shop work on projects to take home

and pieces of furniture for the school. The instructor states that he attempts to give the boys a thorough training in hand tool work to prepare them to go into cabinet and furniture shops as bench workers. As was stated in describing the equipment, there is no machinery in this shop and the room is so small that the work is limited to the usual manual training exercises. The cabinet drafting is carried on in the shop room. The instructor usually makes the designs for the large pieces and the boys work from the full scale drawings.

In the plumbing department instruction is given in lead work and installation of fixtures. The space provided for this shop is so limited that the instructor has to work out many of the installation problems in an open court adjoining the shop. The out of door work depends to a large degree upon favorable weather conditions.

Very little attempt is made to work upon the equipment needed for the school, although the school needs many things that could be made in the shops and would furnish "live" problems for the boys to develop. For example—there is a need for a number of mechanical drawing tables for the drafting departments, where the work is greatly handicapped by the lack of adequate equipment.

The trade drawing for the boys specializing in trade work is largely general in its nature and is not definitely related to the shop work. Most of the drawing necessary to work out the shop problems is taught by the trade teachers. The following statement is taken from the course of study in mechanical and freehand drawing for the Murray Hill and Brooklyn Vocational Schools:

> "Pupils are taught the use of T-squares, triangles, scales, instruments, etc., the general principles of mechanical drawing are derived through the following series of exercises:
>
> "Working drawings; two views of series of prisms, pyramids and cylinders, showing various modifications; working drawings of rectangular blocks; three views. Simple solids and elementary geometrical problems. This work is followed by exercises in lettering, dimensioning and conventional hatchings, after which a brief course in development is given involving the forms previously drawn.
>
> "The freehand drawing work consists of the principles of perspective, proportion, and the technique of sketching.
>
> The foregoing fundamental principles are taught to the students of all trades. Differentiation only takes place after these principles have been thoroughly mastered."

AUTOMOBILE DEPARTMENT—MURRAY HILL VOCATIONAL SCHOOL

Mechanical and freehand drawing is done chiefly from models from which dimensioned sketches are made. Mechanical drawings are then made from these sketches, all necessary dimensions being shown. Perspective sketches are also made of these same objects. To gain practice in interpretation of Patent Office drawings, working drawings are made from perspectives. Inking in and tracing are included in the above.

The practical models mentioned under the different trade departments are distributed among the type problems. These models illustrate the general principles. They are not grouped for use at the end of the course. They have been arranged so for convenience only.

The practical models mentioned under the electrical and woodwork departments follow:

Electric Wiring:
- Wiring Diagrams
- Porcelain Insulator
- Fuse Plug
- Battery
- Binding Post
- Floor Push
- One-Point Switch
- Conventional Threads
- Flat Push Button Plate
- Strap Key
- Annunciator
- Knife Switch
- Lightning Connector
- Buzzer
- Telephone (general drawing and details)
- Automatic Drop
- Bell (general drawings and details)
- Standard Writing Symbols
- Plan Reading
- Layout of Shop Problem

Woodworking:
- Principal joints used in wood work taken in progressive order
- Drawings of wood working tools and details of furniture such as:
  - Book Rack
  - Tabouret
  - Umbrella Stand
  - Foot Stool
  - Dining Room Chair (straight back)
  - Library Table
  - Morris Chair
  - Rocker
  - China Cabinet
  - Dressing Table
  - Writing Table
  - Desk
- Plan Reading
- Layouts of Shop Problems
- Architectural Perspective

The Teaching Staff: The teaching staff is composed of 14 teachers for full time and one teacher of physical education for half time. Of these the teachers of geography, history, mathematics, English and one of the two teachers of mechanical drawing are regular teachers and the others are on the substitute list.

The teachers of the first four subjects mentioned are all col-

lege graduates and each has done considerable post graduate work. They have had several years' experience in elementary school teaching and were selected and transferred to this school when it was first established because of their ability to teach as shown by their previous work. Each one of the teachers of the academic subjects has had some trade training.

There has been little change in the corps of regular teachers since the opening of the school. Three of the five teachers of academic subjects are receiving the maximum salary paid elementary school teachers, $2,400, plus an additional $200 which, under the rules of the Board of Education, is granted to elementary school teachers transferred to teach in vocational schools. For teachers so transferred, there is no increase in the hours nor lengthening of the school years over what was required in the elementary school. This means that the work of the teacher of academic subjects is so arranged that he either has the privilege of coming to school two hours later than is required of the trade teacher, or he is permitted to leave two hours before the trade teacher finishes his day's work.

Trade Teachers: When this school was first established the teachers of trade subjects were selected from the substitute list and at the time of the survey were still substitutes and were teaching seven hours a day for a salary of $5.00 a day. The academic teachers, who, in some cases, receive almost three times the salary of the trade teachers, teach 100 hours a month, while the trade teachers must put in 140 hours a month. In other words, the teacher of a trade subject, as printing, plumbing, electric wiring, etc., receives 71 cents an hour for teaching a shop class, while the teacher of history, science or English receives $2.60 an hour. The trade teachers were selected largely by the principal of the school. His method has been to find a man in the trade whom he considered would make a good teacher and persuade him to try the examination given to substitute trade teachers. If the man was successful in securing a substitute license he was given a position in the school.

Buildings: The quarters provided for this school are the most unsatisfactory for vocational work of any found in the city of New York, and it is doubted that any equally unsatisfactory exist elsewhere in the state. The school plant is made up of a number of old buildings, a four-story elementary school structure facing

CLASS IN PLUMBING—MURRAY HILL VOCATIONAL SCHOOL

on 37th street, an annex, midway between 37th and 38th, and a number of old brick houses facing on 38th street. A vocational school requires large, well lighted shops with floors capable of sustaining the weight of heavy machinery. In no respect does this building meet these requirements as the rooms are small, poorly lighted and poorly ventilated and the floors are not strong enough to sustain the weight of heavy equipment. Several of the shops located in the basement are so poorly lighted that it is necessary to use artificial light. The ceilings in these basement shops are low and the ventilation is so poor that the pupils have to work in an atmosphere that is dangerous to their health. In the plumbing shop, for example, when the pupils are working with lead the fumes do not have a chance to escape properly and thus the health of the pupils and teachers is endangered. The Board of Education has recommended that this building be remodeled.

Equipment: The total investment in equipment in this school would not be sufficient to provide for one good vocational woodworking shop. Many villages and small cities in the state provide much better equipment. The difficulties of accomplishing satisfactory work with the facilities provided in this school, are evident.

The woodworking shop which is located in a low basement is so small that there is no space for the installation of machinery or the working out of problems in house framing, stair building or the construction of large pieces of cabinet work. The equipment consists of fifteen small manual training benches, fifteen sets of hand tools, a few special tools, clamps and glue pots.

The print shop, which is also located in a dark basement room, is the best equipped shop in the school. This equipment consists of fifteen cases, two small job presses, one automatic job press, a paper cutter, imposing stone, stitcher and other small furniture.

The drawing rooms are also small and poorly lighted. In one of them regular class room desks are used, the other has freehand drawing tables.

Records and Reports: The school records of each boy who enrolls in the school are full and complete up to the time he leaves to go to work. There is a separate folder for each pupil in which is kept his complete school history. His attendance, communications with and from his parents, the reports of his teachers are all filed in the one place. In addition a complete card catalog system with numerous cross references is kept up to date and

used as a means of training the fourth term boys in office practice.

The records of the boys after they have left school is far from complete and little is known of what has become of the boys who failed to complete the course which is about three-fourths of those who have enrolled.

Analysis of Costs: The financial report of the Board of Education shows that the cost per capita, based on daily average attendance for the year 1915, was $141.35. This is only exceeded by the cost for the training schools where the per capita cost for the same year was $160.38. The per capita cost for the high schools was $100.68. This same report also gives the per capita-per-hour cost. For the Murray Hill Vocational School this per capita-per-hour cost was 9.6 cents; for the training schools 16.8 and for the high schools 10.7 cents.

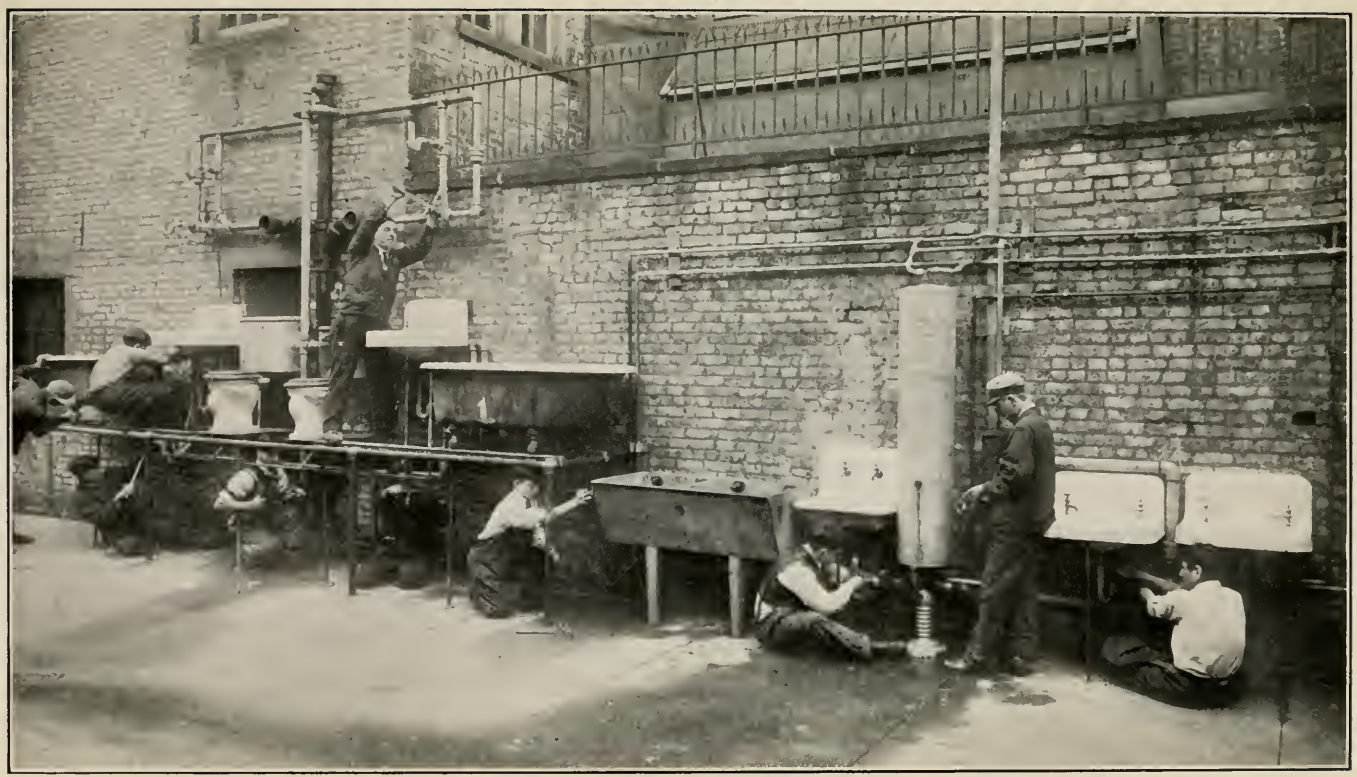
To give the per capita-per-hour cost is a much more accurate method than to give the per capita-per-year cost, but a further analysis of the above costs is enlightening.

The table below shows the relation between the overhead expense and the cost of instruction in the non-vocational subjects and in the trade subjects. The per capita-per-hour basis of distribution makes it possible to compare the three boys vocational schools.

Year	Other Than Teachers	Teachers of Non-Vocational Subjects	Teachers of Vocational Subjects	Total per Capita per Hour for Salaries
1915.....	.0167	.0280	.0379	.0826
1916.....	.0154	.0268	.0374	.0796

As near as can be determined without consulting the data which are not easily secured, the distribution of the annual per capita cost $141.35, would be about as follows: Supplies $24, supervision of the principal $11, academic instruction $55, trade instruction $45, leaving $6.35 not included in these four items.

Although the average cost for all the trades taught is about $45 for trade instruction, there is much difference in the cost for the several trades in which instruction is offered. Electric wiring that is taught to large sections of from 19 to 34 boys in a section, costs but $22 per capita-per-year for trade instruction, and auto repairing costs $26. At the other end of the scale are woodwork where less than a dozen pupils are registered and sign painting where a trade teacher devotes six-sevenths of his time to six pupils.



CLASS IN PLUMBING—MURRAY HILL VOCATIONAL SCHOOL

The limited shop facilities for the plumbing department make it necessary to carry on the installation work in court adjoining shop.

SUMMARY:

1. The school records for attendance show that the school does not hold its pupils. Half of the pupils who enter the school remain less than five months and only a third of the pupils remain as long as a year.
2. The academic classes are excessively large and made up of pupils from several trades and different terms in the school. Because of their mixed character and size, correlation with the shop work is practically impossible.
3. The equipment in the school is so poor and the facilities for trade instruction are so inadequate as perhaps to account in part for the large pupil mortality in this school. It would be impossible to give some of the trade courses offered, even if there were boys registered for the course.
4. The shop instruction is largely exercise work and little attempt is made to work out practical constructive problems.
5. The academic teachers who were transferred from the elementary schools have a five-hour day and receive $2,600 for a year of ten months. The trade teachers from the opening of the school until March, 1917, were on a substitute teacher basis and received $5 for a seven-hour day. The trade teachers have a year of eleven months.
6. The building in which this school is conducted is in every way unsatisfactory for vocational school work. The shops are small, poorly lighted and furnished with almost no equipment that meets trade standards.
7. No record is kept of the boys after they have left the school if they leave without completing the course. This means that no record is kept of almost three-fourths of the boys who have been in the school.
8. Trade instruction in woodworking and sign painting, because of the small enrollment in each, is more than twice as expensive per capita as for the other trades taught in the school.

BROOKLYN VOCATIONAL SCHOOL FOR BOYS

The Brooklyn Vocational School for Boys, which was opened in the summer of 1915 under the supervision of the principal of the Murray Hill Vocational School, has a similar organization. The school is located on the seventh floor of the Cary Building, which has approximately a floor area of 13,000 square feet. The layout of this space is planned to utilize to the greatest advantage every particle of light and every square foot of floor area.

Classification of Pupils for the Trade: As in the Murray Hill School, each boy is permitted to enter the trade of his choice and given a try out period in that trade. If his work is not exceptionally good he is shifted from trade to trade until he finds himself, or proves that he does not care to follow any of the trades offered by the school. The distribution of the boys for the different trades taught was as follows in March, 1917:

1. Wood work—32
    1. Joinery
    2. Cabinet making and finishing
    3. House carpentry
2. Metal work—79
    1. Machine shop practice
    2. Tool and die making
    3. Sheet metal work
3. Electric work—87
    1. Electric wiring and installation
    2. Instrument making
    3. Electric signs
    4. Electro-plating
4. Drafting—55
    1. Mechanical—55
    2. Architectural
    3. Making and reading blue prints
5. Garment design—24
    1. Cutting
    2. Designing
6. Printing—46
    1. Composition
    2. Imposition
    3. Proof reading
    4. Press work

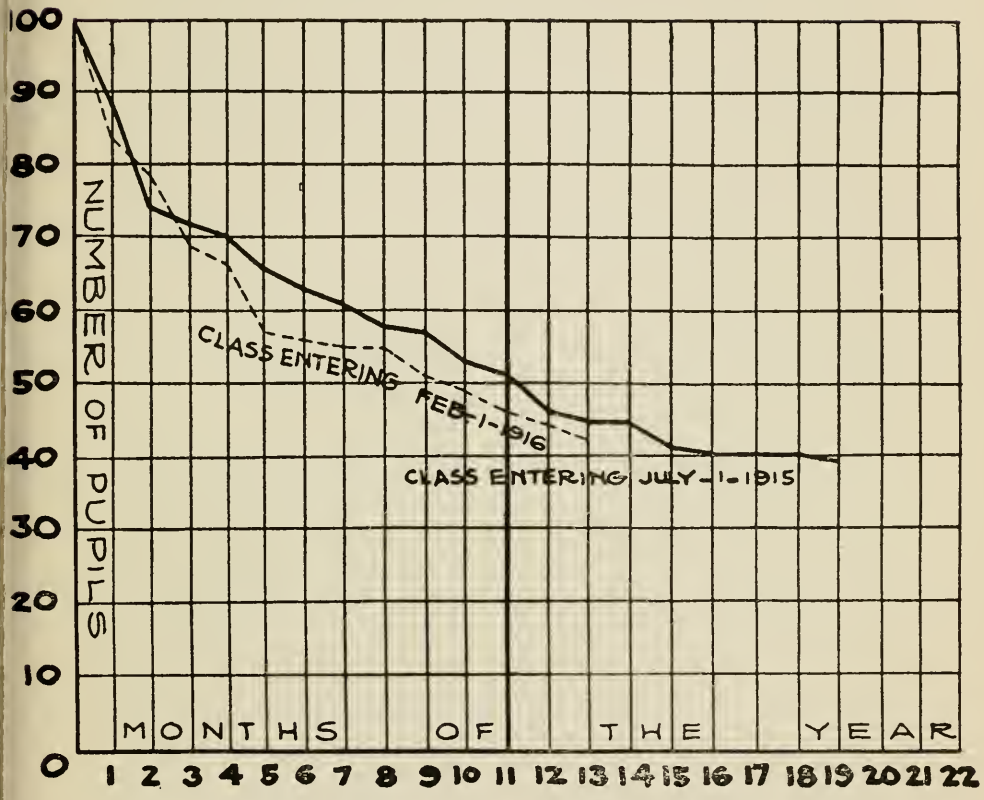
Holding Power of the School: Since the school was not opened until June, 1915, its holding power for the full two-year course has not yet been demonstrated. The 1915-16 report of this school gives the average daily register for the school year as 237, the average daily attendance as 217 and from these two numbers the percentage of attendance is figured as 91.5. Since an average of ten percent of the enrollment leave each month to be replaced by new boys who are admitted, the 91.5 percent of attendance does not present a true picture of the real attendance.

The record of the first hundred pupils who entered the school exclusive of those transferred from the Murray Hill School, is shown in Chart No. 9. For a basis of comparison with the July class in this school, as well as with the February and July classes in the other vocational schools, a study was made of the first hundred pupils who entered the school in February, 1916.

The two groups show practically the same loss from month to month. At the end of the third month 28 per cent. of the July class had quit and 31 per cent. of the February class. At the end of the first year there remained in the school 51 per cent. of the July class and 46 per cent. of the February class. It seems

CHART 9

BROOKLYN VOCATIONAL SCHOOL FOR BOYS



This chart shows the enrollment month by month of two groups of one hundred pupils each who entered this school in February and July, 1916. It reads as follows: Of the class entering in July 89 remained more than one month, 75 remained more than two months, etc.

reasonable to assume, therefore, that something like 50 per cent. of the pupils who enter this school will remain to the end of the first year and between 25 and 35 per cent. will finish the two-year course. The admissions and discharges month by month since this school opened are shown below:

	1915		1916		1917	
	Admissions	Discharges	Admissions	Discharges	Admissions	Discharges
January	...	..	6	11	99	48
February	...	..	111	19	15	20
March	...	..	11	12	7	20
April	...	..	7	16	...	..
May	...	..	3	10	...	..
June	150	..	6	16	...	..
July	95	1	86	36	...	..
September	71	26	48	25	...	..
October	15	18	16	46	...	..
November	2	9	11	13	...	..
December	9	4	4	5	...	..
TOTAL	342	58	309	209	121	88

It was not until January, 1917, that any of the "discharges" were due to the fact that the boys had finished the two-year course. Twenty-three of those who left in January were graduates and three more graduated in March. The boys who graduated before the school had been open two years were boys who had had part of the course at either the Murray Hill or the Boys' Vocational School.

Attendance of Pupils: The pupils show an excellent record for attendance as long as they remain in school, which speaks well for the spirit of this school. One-half of the pupils were almost perfect in attendance. An additional fourth of the group were present 17 or more days each month and less than 4 per cent. of the whole group were absent one-third of the time.

Size of Classes: The limited quarters arranged for this school and the great demand on the part of pupils for a chance to enter has enabled the school authorities to secure a more even distribution of pupils, as far as the trade classes are concerned, than is found in the other schools. When certain of the more popular trades as electric wiring, mechanical drawing and machine shop

PRINTING DEPARTMENT—BROOKLYN VOCATIONAL SCHOOL

practice registered pupils up to their maximum capacity, some boys have been willing to enter other trades rather than not be permitted to enter the school at all.

On the other hand the small total enrollment has brought up many difficulties in regard to the organization of the academic classes. The sections in mathematics, English, history and science range in size from 11 to 61 pupils. In order to get all of the trade sections into the academic classes various combinations of trade groups have been made which have tended to nullify any correlation which might otherwise have been made between the trade work and the academic work. It has also been impossible to put pupils of the different terms in different sections.

Examples taken from the organization of the classes in trade mathematics which recite three times a week will illustrate the problem of arranging the classes in a trade school that has a small enrollment. Nine of the eleven groups have forty or more pupils in the class, one group 61. The pupils taking garment design are in two groups, one group having in it pupils of the first and second terms, the other group having the pupils of the third and fourth terms. On Tuesday, one of these groups recites mathematics with a group of printers also made up of pupils from two different terms. On Wednesday they have their mathematics with the drawing pupils of all four terms. On Friday they have the teacher and period to themselves. Woodworkers, printers and garment designers, six different term groups, go to make up one section in mathematics and there is no section where the pupils of one term of one trade recite mathematics by themselves. The trade classes in garment design, woodwork and sheet metal range from 12 to 18 pupils. The printing and machine shop classes enrolled from 24 to 25 pupils. In electric wiring and mechanical drawing where vacancies in the corps of teachers had not been filled at the time the survey was made, the classes had from 40 to 50 pupils.

Courses of Study: What was stated under this head in describing the Murray Hill School also applies to the Brooklyn Vocational School, the two being under the supervision of the same principal. The title page of the eight courses of study which the survey staff were able to receive (history, garment design, electric wiring, machine shop work, English, trade mathematics, trade drawing, mechanical drawing), stated that they were made for both schools.

The Relation Between Academic and Trade Instruction: The general scheme of work for the Brooklyn Vocational School is the same as for the Murray Hill School. This gives a total of 20 hours a week to the academic work and 15 hours a week to the trade work. As was pointed out in describing the size of the sections in the academic work, the teachers of these subjects are greatly handicapped not only by the excessive size of the class room unit but also by the mixture of boys of different trades and different terms of different trades in the same class.

It was not uncommon for a teacher to hear a part of a class recite and then assign to them a study lesson, next hear a second group recite and assign to them a study lesson and then devote the remainder of the class period to a third group. In some recitations the instruction was directed to the middle term groups. This gave the boys of the fourth term work that they had already had and left the boys of the first term perplexed at what they could not understand. Another plan was to present matter that was only new to all of the different divisions in the class but was so general in its nature that it was equally adapted to each division.

In all the classes the spirit shown between the teacher and the pupils was excellent. The boys showed by their attitude that they liked and respected their teachers. There was good attention in class at all times without anything approaching the military type of discipline.

Shop Instruction: The character of the instruction in this school is practically the same as the instruction in the Murray Hill Vocational School. The work consists largely of graded exercises similar to those found in many high school manual training departments. Very little attempt is made to introduce practical constructive problems. The work is also seriously handicapped by lack of equipment and room. For example, in the machine shop there are 24 boys in one section and 25 in the other. The equipment provided will permit only 14 boys to work on machines at one time and as a result part of the class has to work at the bench or two boys have to be assigned to one machine. In the print shop the sections are made up of 25 and 24 boys respectively. The equipment and quarters are not large enough to accommodate this number and the difficulties of instruction are greatly increased by the overcrowding. The work in the electrical

CLASS IN SHEET METAL WORK—BROOKLYN VOCATIONAL SCHOOL

department was also greatly handicapped at the time of the survey by large classes and by lack of teachers. At that time one instructor was employed who had charge of two shops, with two sections each day of forty-six boys.

The work of the drawing department at the time of the survey was general in its character due to the fact that one instructor was teaching sections of 50, 46, 42 and 16 boys.

The Teaching Staff: The teaching staff was composed of eleven teachers for full time and one teacher of physical training for half time. The teachers of history, English, science, mathematics and mechanical drawing were regular teachers and the other teachers of the trade subjects were substitutes. As in the Murray Hill School, the teachers of science, history and English are exceptionally well educated men. They were graded as excellent teachers in the elementary school and were selected to teach in this vocational school when it first opened because of their proven ability. No one of the three has had trade or technical training or experience.

All three of these teachers were receiving the maximum salary in the elementary school and with the $200 additional salary paid elementary school teachers on being transferred to a vocational school, they are now receiving $2,600 a year. The length of the school day for these teachers who were transferred from the elementary school is the same as it was there—five hours a day.

Trade Teachers: Of the trade teachers all were substitutes at the time of making the survey except one of the teachers in mechanical drawing. One of the trade teachers is a high school graduate, another completed two years of high school work and most of the others have taken evening courses in Cooper Union, the Polytechnic Institute or evening trade schools. All have had considerable trade experience, the average for the group being 16 years. The salary each was earning just before entering the school as a teacher was in most cases the union scale for that trade, $27.50, $30.00 or $35.00 a week. As they were all substitutes each received the regular pay for substitute teachers, $5.00 a day for each day the school was in session. Each of the trade teachers teaches seven hours a day.

Building: At the time of the survey there were seven shops and five class rooms located on the floor of the loft building where the school is located. The shops are very small and the work of

the school is seriously limited by lack of room. The shops are well laid out and every available square foot of floor space is used to the best advantage. The lighting in most of the shops is very satisfactory and the ventilation good. The elevator service in the building is very unsatisfactory because of the great delays in getting the pupils in and out of the school.

The principal of this school points out in his annual report that the present arrangement is but a makeshift and recommends that a special building be designed and erected for vocational work in the Borough of Brooklyn.

Records and Reports: In practically all respects these were identical with those of the Murray Hill School.

Analysis of Costs: As this school was not organized until June 21, 1915, the annual per capita cost of $111.21 given in the financial report of the Board of Education is for only the remainder of the school year. The cost per capita-per-hour for the six months of that year that the school was in session was 16.27 cents. The fact that this was twice the per capita-per-hour cost in the other vocational schools was due in large measure to the fact that the cost for supplies was almost as much as the cost for instruction. Since much of this was spent for material that will be used several years such as textbooks, charts, etc., the per capita cost for 1916 was probably much less. The exact figures were not available at the time of writing this report.

The relation between the cost for overhead expense and the salaries for academic and trade instruction is shown in the table below. Since the school was being organized during the year 1915 the costs for the two years are not comparable.

PER CAPITA-PER HOUR CASH DISTRIBUTION FOR SALARIES ONLY

Year	Other than Teachers	Teachers of Non-Vocational Subjects	Teachers of Vocational Subjects	Total per Capita-per-Hours for Salaries
1915	.0242	.0023	.0656	.0921
1916	.0043	.0256	.0309	.0608

The smallest register for any trade course for the month of March, 1917, was 24 pupils. The Boys' Vocational School had five trade courses that month that had ten or less pupils registered and the Murray Hill Vocational School had one with less

CLASS IN GARMENT DESIGN—BROOKLYN VOCATIONAL SCHOOL

than ten registered. As pointed out before, it is the small trade class that causes the cost to become excessive.

The difference in the salary of the academic teachers and trade teachers is very noticeable. Three teachers of academic subjects received a total of $780 a month for a total of 300 hours of teaching. Eight trade teachers receive a total of $800 a month for a total of 1,120 hours of instruction. The per capita-per-hour cost for the academic instruction is kept down in spite of the high salary and short school day of the teachers of these subjects, by registering excessively large classes in these subjects. As was pointed out in the paragraph describing the size of classes, this lower cost has been secured at the expense of correlation between the shop course and the trade, efficiency of the academic work has been sacrificed in order to lower the cost.

SUMMARY:

1. The school is located on the seventh floor of a loft building and has very poor elevator service. The quarters are so small that a very limited number of boys can be accomodated.
2. The boys are more evenly distributed among the trades taught than in the other vocational schools. The smallest registration for any trade course at the time of making the survey was 24 in garment design; woodwork, the next to the smallest, had 32.
3. The school has not been organized long enough to determine with accuracy how many of its pupils will remain to the end of the two-year course.
4. The academic classes are large and mixed. Boys of different trades and different terms of the same or different trades being in the same class.
5. Trade classes of over 46 pupils both in drawing and electrical work and 24 in machine shop practice and printing were taught in small shops that were equipped for a much smaller number of pupils. Contrary to the practice in the other vocational schools there were no trade classes so small as to make the per capita cost unduly expensive.
6. As in the Murray Hill Vocational School the overcrowded academic classes prevented close correlation between the academic and the shop instruction; the shop instruction was mainly exercise work and the academic teachers received a much larger salary for teaching a five-hour day than that received by the trade teachers for a seven-hour day.
7. The records are the same in the two schools, giving a complete record of each pupil's time in school, but little history of what happens to those who fail to complete the course.

DISTRIBUTION OF PUPILS AND TEACHERS IN THE THREE VOCATIONAL SCHOOLS FOR BOYS

The accompanying table gives the number of trades taught in each of the boys' vocational schools, the number of pupils registered for each trade at three months intervals since June, 1915, and the number of teachers employed for each trade subject. The first impression one gets from examining the table is that there is little relationship between the number of boys registered for a trade course and the number of teachers employed. Neither does there seem to be any uniformity of practice between the different schools in this respect. Each of the months for which the data are given shows this very clearly. In the Boys' Vocational School six teachers are employed in the printing department for very few more boys than are handled by one teacher in each of the other schools. For woodwork in the Boys' Vocational School three teachers at salaries of $2,250, $2,125, and $1,500, respectively, are employed to teach woodwork, where only about half as many boys are registered as are registered in the woodworking course in the Brooklyn Vocational School, where they are taught by one substitute teacher who receives $5.00 a day. Sign painting has required at times three teachers and still employs two teachers for a register of nine pupils. The fact that the sign painter at the Boys' Vocational School gives lessons in lettering to printers increases the wonder as to why six printers need this assistance when in the Brooklyn Vocational School one printer is able to teach almost as many pupils without such assistance. The more the table is studied the more clearly it is seen that the attempt to teach the same trade in all schools means a great waste of money and energy.

All the pupils registered for sign painting are in the Murray Hill School.

		June, 1915			Sept., 1915			Dec., 1915			March, 1916			June, 1916			Sept., 1916			Dec., 1916			March, 1917			Totals for March, 1917
		Brooklyn Voc.	Murray Hill	Boys' Voc.	Brooklyn Voc.	Murray Hill	Boys' Voc.	Brooklyn Voc.	Murray Hill	Boys' Voc.	Brooklyn Voc.	Murray Hill	Boys' Voc.	Brooklyn Voc.	Murray Hill	Boys' Voc.	Brooklyn Voc.	Murray Hill	Boys' Voc.	Brooklyn Voc.	Murray Hill	Boys' Voc.	Brooklyn Voc.	Murray Hill	Boys' Voc.	
Automobile repair	T*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	..	...	1	..	...	1
	P*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	34	...	...	43	..	...	65	..	...	65
Drawing: Architectural and mechanical	T	2	2	..	2	2	1	2	1	..	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1	6
	P	118	21	..	153	36	23	95	34	32	112	42	34	94	36	34	103	37	40	94	40	39	95	62	55	212
Electric wiring	T	3	3	..	5	3	1	7	3	1	9	2	1	9	3	..	8	2	1	7	2	1	6	2	1	9
	P	270	76	..	314	100	62	278	92	58	280	122	81	241	102	73	276	117	100	202	91	87	220	103	87	410
Machine shop	T	5	..	..	5	...	1	5	..	1	6	...	1	5	...	1	5	...	1	5	..	1	5	...	1	6
	P	160	..	..	279	...	32	242	..	28	259	...	38	191	...	32	248	...	39	192	..	35	224	...	46	270
Plumbing	T	1	1	..	1	1	..	1	..	..	1	1	..	1	1	..	1	...	..	1	1	..	1	..	..	2
	P	28	28	..	19	31	..	11	23	..	23	35	..	20	26	..	20	24	..	11	20	..	9	34	..	43
Printing	T	3	1	..	3	1	1	5	1	1	6	1	1	6	1	..	5	1	1	6	1	1	6	1	1	8
	P	73	30	..	86	33	28	57	32	23	63	44	38	53	35	31	58	34	39	45	26	40	52	39	46	137
Sheet metal	T	1	..	..	1	...	1	1	..	1	1	...	1	1	...	1	1	...	1	1	..	1	1	...	1	2
	P	12	..	..	17	...	28	13	..	25	22	...	30	15	...	27	13	...	45	9	..	34	9	...	33	42
Sign painting	T	...	1	..	...	1	..	...	1	..	1	1	..	2	1	..	2	1	..	2	1	..	1	1	..	2
	P	...	18	..	...	17	..	...	16	..	...	8	..	...	8	..	...	9	..	...	6	..	...	9	..	9
Woodwork	T	3	1	..	3	1	1	3	1	1	3	1	1	3	1	1	3	1	1	3	1	1	3	1	1	5
	P	42	7	..	41	6	18	30	7	24	25	11	..	24	7	30	22	7	34	19	8	33	19	14	32	65
Modeling	T	1	..	..	1	...	..	1	...	..	1	...	..	1	...	..	1	...	..	1	..	..	1	...	..	1
	P	10	..	..	14	...	..	10	...	..	10	...	..	10	...	..	10	...	..	9	..	..	7	...	..	7
Tile laying	T	...	..	..	...	...	..	...	...	..	...	...	..	1	...	..	1	...	..	...	..	..	...	...	..	...
	P	...	2	..	...	...	..	...	...	..	...	...	..	...	...	..	...	...	..	...	..	..	...	...	..	...
Commercial design	T	1	..	..	1	...	..	1	...	..	1	...	..	...	...	..	1	...	..	1	..	..	1	...	..	1
	P	33	..	..	46	...	..	32	...	..	36	...	..	31	...	..	33	...	..	29	..	..	40	...	..	40
Garment design	T	...	..	..	...	...	1	...	..	1	...	...	1	...	...	1	...	...	1	...	..	1	...	...	1	1
	P	...	..	..	...	...	9	...	..	10	...	...	24	...	...	23	...	...	22	...	..	22	...	...	24	24

T*—Teachers
P*—Pupils

MANHATTAN TRADE SCHOOL FOR GIRLS

In September, 1910, the Board of Education took over the Manhattan Trade School for Girls which had been up to that time a private, philanthropic institution. The aims and purposes of the school which have not been changed since the school was founded in 1901 were then stated to be:—

1. To train young girls who are forced to leave school and become wage earners, to enter the skilled trades.
2. To imbue them with a love and respect for work.
3. To arouse in them a desire to become the best type of workers.

Trade Departments: The different trade departments of this school cover the work of the needle trades, the electric power machine operating trades, the pasting trades and a special course in embroidery designing and perforating of embroidery patterns.

Under the needle trades comes dressmaking, children's clothing, lingerie, lamp shades and millinery. In the power machine operating classes, instruction is given not only in the sewing of women's and children's garments but also in embroidery, braiding, hemstitching, glove and straw hat making. The pasting classes do sample mounting and a variety of novelty work.

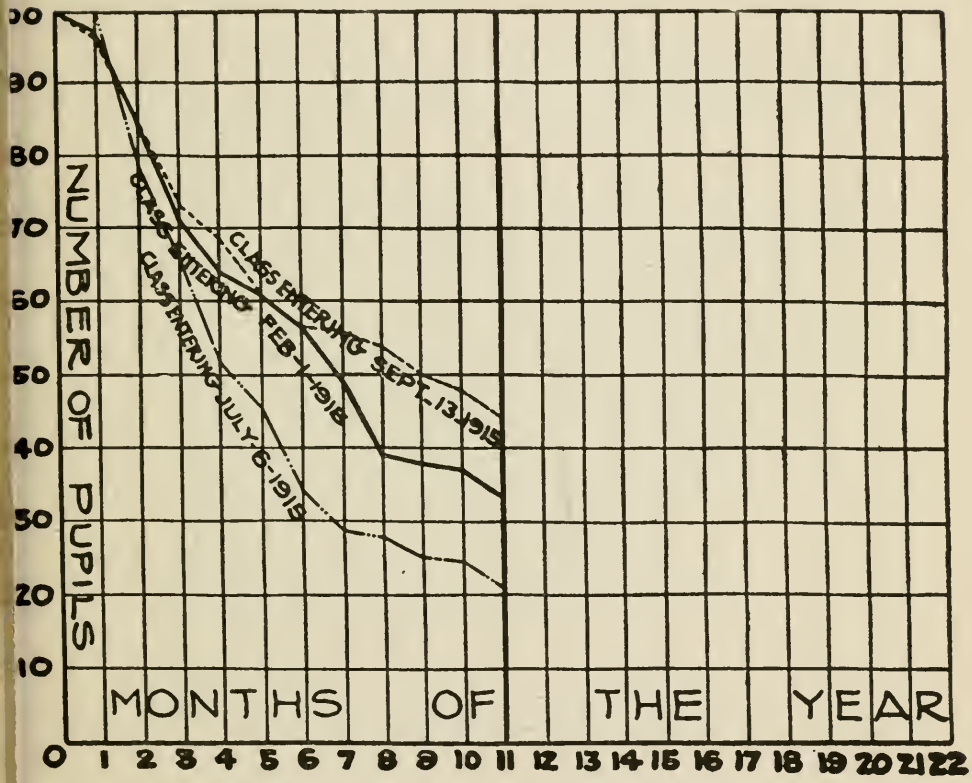
These trades were chosen because they require some degree of skill on the part of the worker in order to enter the trade and offer more or less opportunity for advancement.

Classification of Pupils for the Several Trades: The girl who enters the Manhattan Trade School must be 14 years of age (except for elementary school graduates) the others being pupils from the 7th and 8th grades who are 14 or more years old when they entered.

A girl in almost all cases is permitted to enter the trade she desires to learn and about 70 percent of all who enroll wish to become dressmakers. The number who enter each of the other trades taught is determined to a considerable extent by the equipment which the school has for teaching the trade. For instance, the number of power machines for straw hat sewing and glove making is limited, and, obviously, only as many girls can study these trades as there are machines where they can work.

Holding Power of the School: This school registers its largest entering classes in February, July and September although new

CHART 10.
MANHATTAN TRADE SCHOOL FOR GIRLS



This chart shows the enrollment month by month of three groups of one hundred pupils each that entered this school in February, July and September, 1915. It reads as follows:—Of the class entering July 6, 1915, one hundred remained more than one month, 79 remained more than two months, etc.

pupils are registered any week during the year. In order to determine the holding power of the school, the records of the first hundred pupils that entered the school during each of these three months were studied. The effect of the long summer vacation is clearly seen in comparing the attendance record of these three groups. For the first six months the holding power of the school upon those who entered in February and those who entered in September was practically the same, month by month. There were 84 of each group in the school at the end of the second month, 61 of each group at the end of the fifth month and 57 at the end of the sixth month. Then came the vacation for the class that entered in February and the reduced size of this class as compared to the class entering in September was very marked. The July entering class was very unstable as compared to those who entered in September and in February. The loss at the end of the first six months was greater than the loss from the other classes during the entire year. Some of the pupils who enter this trade school during the month of July do so with the expressed intention of spending only the vacation time in the school and most of these quit to go on with their high school work. Others who enter in July do so because there are so many girls desiring positions just at this time, due to the closing of the schools, that there are more girls than there are positions to be filled and they enter the trade school to fill in their time waiting for a chance of employment. These quit as soon as they get a job but in many cases the training which they receive in this short time enables the girls to get a start in one of the skilled trades instead of being forced to accept employment as errand girls.

Attendance of Pupils: A study of the attendance of these same groups shows that the regular habits of going to school each day were not broken when the girl changed from the elementary school to the trade school. Over a third of the girls who remained a month or more showed an almost perfect record for attendance. An additional third averaged from one to two days' absence for each month and the lower third on the average from three to six days of absence for each month they were in the school.

Sizes of Classes: The classes in the non-vocational school subjects range in size from 15 to 50. Most of the sections have between 30 and 40 pupils. In the trade classes there is an even greater proportional range. The requirements of each trade

determine the number of teachers needed. Not only do some trades require a much larger number of teachers in proportion to the number of pupils than do others, but certain operations in each trade process require that the teacher should be responsible for a smaller group than the teacher of another process of the same trade. It can readily be seen that the teacher of elementary sewing can be expected to get satisfactory work from a larger group of girls than can the teacher of advanced waist draping.

The Relation Between Academic and Trade Instruction: The Manhattan Trade School has from the first stated that its aim was "to train young girls forced to become wage earners to enter the skilled trades." They have assumed that if general education was desired by the girls that they would remain in the elementary school or enter the high school. Each of the published reports of the school has greatly simplified the academic instruction and reduced the time devoted to it.

In the Murray Hill and Brooklyn Vocational Schools twenty hours a week are given to the academic work and fifteen hours a week to trade work. In the Boys' Vocational School the time is equally divided between the academic work and the trade work. In the Trade School for Girls twenty-five hours a week are devoted to trade practice and seven and one-half hours to instruction in the academic subjects.

The time that is devoted to the non-vocational subjects is confined entirely to work related to the trade. The arithmetic is simple measurements of materials and cost of labor and materials used in the making of garments. The English is the writing of business letters such as applying for positions, making appointments and ordering goods. The course in textiles acquaints the girls with the different kinds of goods, their qualities and the methods used in testing fabrics.

Character of the Instruction: "Instruction in the trade school is individual. Classes are so arranged that girls may enter at any time, complete the work of each grade as rapidly as their ability will permit, and pass on to the next. In each trade the work is divided into steps leading from simple beginnings to more complex processes, and girls advance from table to table, from room to room, or from machine to machine, in accordance with their own effort and ability. Each table, room or machine

has its special tasks, to which a certain time allotment is given, so that girls who cannot accomplish tasks assigned to that particular step within the required time, soon recognize that they will be more than a year in completing their course. Girls who can work ahead of scheduled time are given credit for such time as they can save, and hence complete their course in less than the required year. This method of promotion places a premium on individual effort and gives a keen zest to all of the work.

"In order to gain promotion a girl's work must, of course, reach certain required standards, otherwise she is kept back, and expected to repeat it, or she is urged to try some other trade if the results of her efforts show no fitness for the one she has chosen. The fact that a girl knows that she will not be permitted to go on with her trade if she cannot reach the requisite standards, is of great help in stimulating her to do her best.

Shop Practice: "In each trade the work is sub-divided according to its particular needs, in the attempt to plan a real apprenticeship. Girls pass from process to process, until a fairly thorough knowledge of underlying principles is acquired. The classes are in reality trade work rooms where each step is being taught by an expert in that particular line. The teacher of a group acts as forewoman or head worker, taking charge of a table, a room, or a group of machines, as the case may be. She is responsible for such portions of the work as are assigned to her by the manager of the shop. She works with her girls, shows them how to perform the different parts, and sees that each one has a chance for practice in the various processes. A girl thus passes from table to table, and from room to room, gaining, in the course of a year, a knowledge of such parts of the trade as her maturity and judgment will permit. At the end of her course she goes out as a helper in her trade, understanding its language and ready to begin at a level sufficiently high to insure her advancement to higher and higher planes.

"In the trade school girls pass gradually in their training from teachers, who know how to explain and demonstrate, to business women who merely give directions which they must follow. Because of this painstaking drill in fundamentals the average trade school girl is more likely to succeed than one who goes into trade without such knowledge. There is little time for explanation in a shop, and hence girls who have a fair amount of ability, but who have not learned what might be called the

POWER MACHINE OPERATING DEPARTMENT—MANHATTAN TRADE SCHOOL

'letters of their trade,' frequently fall by the wayside. A trade school girl, on the other hand, has learned to interpret the trade language, and when told to perform a certain piece of work is able to analyze her problem and do it."

The Teaching Staff: The two teachers of academic subjects, English, mathematics and textiles, are both graduates of the Brooklyn Training School and each has taken several college extension courses since becoming a teacher. Both were elementary school teachers of experience who were transferred to the Manhattan Trade School under the rule of the Board of Education permitting this to be done and granting an additional $200 salary to such teachers as were transferred to vocational schools. The small number of teachers transferred under this rule from the large number who might desire to teach in a vocational school, because of the freedom of the work as well as the increase in salary, gives the chance of securing the very best of the elementary school teachers. As in the case of the Murray Hill School and the Brooklyn Vocational School, where the academic teachers were also secured by transfer from the elementary school, excellent teachers have been selected. The school day for the academic teachers is five hours in length, the same as the length of the day in the elementary school.

Trade Teachers: The following positions and salaries for trade teachers in this school are recognized in the salary schedules of the Board of Education:

Head of Trade Department	$1,600	$2,000
Department Vocational Teachers	1,000	1,500
Vocational Teachers	900	1,100
Placement and Investigation Teachers	1,100	1,400
Substitute Head Teacher	6.00 per day	
Substitute Placement and Investigation Teacher	5.00 per day	
Substitute Teacher of Sewing	4.00 per day	
Substitute in Non-Vocational Subjects	.50 per hour	
Substitute Department Vocational Teacher	5.00 per day	
Substitute in Vocational or Trade Subjects	5.00 per day	
Substitute Teacher Clerk	4.50 per day	
Substitute Assistant Teacher	3.50 per day	
Substitute Trade Order Teacher	3.50 per day	
Substitute Assistant Trade Order Teacher	2.50 per day	
Substitute Assistant Teacher Clerk	3.50 per day	
Substitute Trade Helper	1.00 per day	

In probably no other place in the school system is it more difficult to adjust the machinery that was devised for selecting and paying teachers of academic subjects to the needs of a school of a different type. Although all of the above classifications were made especially for this school many more should be made to secure the most efficient service. There is no provision for the employment of teachers with trade experience in specialized subdivision of the different trades which the school teaches. A fixed salary rate for all trade teachers has no relationship to the payment for similar work in trade. It tends to prevent the school from securing the services of the best trade workers in some of the better paying trades and pays some trade workers considerably more than they could secure in the trade itself.

This school is holding its substitute teachers much longer than the salary paid substitute teachers in the boys' vocational schools enables them to hold their teachers. Two-thirds of the substitute trade teachers have been in the school for five or more years.

The school has been without a teacher of glove making for several months and the machines have been idle, not because it was impossible to secure a teacher who understood all about the making of gloves, but because it has so far proven impossible to secure a glove maker who could pass the English examination given by the board of examiners.

Buildings and Equipment: The building and equipment are under lease by the Board of Education. The quarters have proven entirely too small and a building that will be adequate in every way for the needs of the school is now under construction. At the time of entering into the lease in 1910 a valuation of $5,500 was placed upon the equipment by the trustees; since then the school, through the profits made on the sale of its manufactured product, has been able to purchase considerable new equipment each year.

Records of Pupils' Work: "A record of each girl's work is kept from the time she enters the school. This is estimated in quality of workmanship, rapidity with which she works, and her attitude toward her tasks. When placing girls in trade these records are used by the placement secretary in recommending them for positions and in seeking for them an opportunity where their particular talent will count most. Moreover, it helps the school to speak with some authority both as to the kind of service a girl can render and her probable wage value. It has, too, given

the girl an idea of measuring her own efficiency and an understanding of the basis on which her wage value may be reckoned. Each girl's trade record is kept on file and is continued as long as she is willing to report back to the school. The girls report willingly and are of great assistance in keeping the school in close touch with the daily problems and difficulties they are meeting." The employers are also asked to report on the work of the girls and state in what respect, if any, their work is unsatisfactory.

From the records which were on file a study was made of the wages received by the girls who graduate from this school in the dressmaking department and the power operating department. The table below shows the distribution of four groups of girls according to the weekly wage received at the start and at the end of the first year of service.

TABLE SHOWING THE WEEKLY WAGE RECEIVED BY GRADUATES OF THE MANHATTAN TRADE SCHOOL FOR GIRLS AT THE START AND AT THE END OF THE FIRST YEAR OF APPRENTICESHIP IN POWER OPERATING AND DRESSMAKING

	POWER OPERATING		DRESSMAKING	
Weekly Wage	Beginners	After one year	Beginners	After one year
$ 5.00	12	..	8	..
$ 6.00	16	4	32	3
$ 7.00	17	9	..	20
$ 8.00	5	14	..	..
$ 9.00	..	5	..	8
$11.00	..	2	..	..
$11.00	..	2	..	4
$12.00	..	4	..	..
$14.00	50	50	40	50

This school has had a placement department for many years. This department not only places the graduates of the school when they first finish the course but also keeps in touch with the girls and their employers. The following table shows the number of calls that employers made upon this department:

EMPLOYERS' CALLS FOR YEAR 1916-1917

Dressmaking and Miscellaneous Sewing	817
Millinery	87
Lamp Shades	69
Garment, Embroidery and Straw Operating	289
Samples and Novelty	134
	1396

In filling these positions both the recent graduates of the school and those who had previously finished the course and applied to the placement teacher for help in securing a better position were used. The table following shows the weekly salaries secured by the 237 girls who were going into employment for the first time. Nineteen percent of these were under 16 years of age.

	$0.00	$6.00	$6.50	$7.00	$8.00	$8.50	$9.00	$10.00	Pc.	Total
Dressmaking	3	78	21	44	3	..	..	..	..	149
Millinery ..	1	4	..	7	1	..	..	..	..	13
Lamp shades	..	..	..	4	2	..	..	..	..	6
Samples ...	1	8	2	5	..	..	..	..	..	16
Novelty	..	2	..	3	2	..	..	..	2	9
Garment Op.	..	..	..	10	..	..	..	..	2	12
Embroidery Op.	..	..	..	5	7	1	1	1	..	15
Straw Op..	..	..	..	1	3	..	..	..	12	16
Glove Op...	..	1	..	..	..	..	..	..	..	1
	5	93	23	79	18	1	1	1	16	237

During the year 1916-1917, 619 applications were received from girls who had formerly been placed by this department. In this number there were 435 dressmakers, 33 milliners, 88 power operators, 44 sample and novelty workers and 19 who desired lamp shade work. Of this number 444 were placed as shown in the table below:

	$5.00	$6.00	$6.50	$7.00	$7.50	$8.00	$8.50	$9.00	$10.00	$11.00	$12.00	$13.00	$14.00	$15.00	$16.00	$17.00	$18.00	Day	Piece Work
Dressmaking ...	3	30	6	97	2	72	2	22	36	5	34	2	3	1	2	1	3	14	4
Millinery		1		6	1	1		2	2									3	
Lampshades		2		5		3		1	2										2
Samples		1	1	8		1		1											
Novelty	1			4		2		1										1	4
Garment Op.....				5		6		1											7
Emb. Op.....				3		5		3	1	1	3		1						2
Straw Op.....									1										10
Total.....	4	34	7	128	3	90	2	31	42	6	37	2	4	1	2	1	3	18	29

Commercial Product: Four-fifths of the trade school program is devoted to trade practice. This means that it is necessary for the school to provide a large amount of material and it results in the school having a considerable manufactured product each year.

CLASS IN ADVANCED DRESSMAKING—MANHATTAN TRADE SCHOOL

marketable product in order that the girls may have the same standard set before them in the school that they will meet in the commercial world outside and also that the girls may be furnished with material that in both quantity and quality will furnish the highest type of training. From January, 1916, to December 31, 1916, the school used material in their shops costing $11,848.29. This material when sold as a manufactured product produced $19,112.63, giving the school a profit of $7,264.34. The amount gained from these sales is used to purchase supplies and equipment for the school.

SUMMARY:

1. Seventy per cent. of the girls who enter this school take up dressmaking. Lack of equipment keeps the classes in power operating smaller than they would be if all of the girls who desire to learn this trade could be accommodated.
2. Many girls who enter the school do so to get a start in some factory, and leave as soon as there is an opening. About a third of those who register in the school remain to the end of the course.
3. The academic work is mainly that which is developed in the trade taught and so is very closely correlated with the trade instruction.
4. The trade instruction is definite and well graded so that the completion of one operation or process leads directly to one slightly more complicated and difficult.
5. The standard of the commercial shop is the standard of the school shop both for quality of work and speed on the part of the worker.
6. Most of the teachers of the school are serving as substitutes on a per diem salary schedule. There is little change in the teaching force compared with the change of substitute teachers in the vocational school for boys. Two-thirds of the substitute teachers have been connected with the Manhattan Trade School for five or more years.
7. The present building is totally inadequate and a large building is now being erected for this school.
8. The records of the pupils, both while in school and after they have left, graduates and non-graduates, are extensive and well kept.

REPORT OF THE ADVISORY COMMITTEE ON DAY VOCATIONAL SCHOOLS

After studying the findings of the survey of the day vocational schools and the surveys of the trades of printing, machine work, carpentry, and inside electrical work, and visiting the three trade schools for boys, your committee submits the following report:

The committee believe that conditions in the above-mentioned trades, as revealed by the various surveys, make it advisable for the City of New York to maintain day vocational schools giving instruction that shall prepare young persons to enter these trades at 16 or 17 years of age.

In this connection, and for the sake of clearness, the committee would record their definition of such schools:

By vocational schools the advisory committee has in mind schools giving full-time day industrial training in the period between elementary general education and pre-vocational training on the one hand, and the period of employment on the other. The function of the day vocational schools is regarded as that of giving pre-employment training.

In the printing and machine trades, the committee believes that there is not only a lack of ideas as to materials and methods, that in part at least can be taught effectively to boys in a pre-employment school, but that each of these trades is capable of absorbing each year a considerable number of boys of 16 or 17 years of age whose chances of advancement to high-grade positions would be materially assisted by training in such schools.

On the side of the trade, such schools should furnish a supply of well prepared boys who have passed through an extended selective training and whose chances of success in the trade would be greater than those who have not had such preparatory training.

If maintained in close co-operation with the industries, such schools should serve a helpful office in adjusting the supply of young workers to the needs of the trades.

With the conditions existing in the carpentry trade, it is evident that there is not the opportunity for young workers of 16 or 17 years of age to enter the trade with the chance for advancement to high-grade work that is present in the case of printing and machine work. Such openings are limited to the mills and shops dealing with high-grade work and to the comparatively few opportunities presented for after advancement to foremen and other supervisory positions in both inside and outside work. These opportunities, however, seem sufficient to warrant the maintenance of pre-employment classes of limited size in this trade.

In the trade of inside electrical work, the committee realize that the following conditions are present: first, it is difficult to duplicate practical trade conditions in a vocational school; sec-

ond, there is a well organized apprenticeship plan in the trade and many young workers are taking evening courses of instruction that necessarily follow lines similar to those that must be dealt with in the day schools. They believe, however, that such classes are warranted if their scope is widened to include other branches of electrical work.

In regard to the school organization best fitted for such training, they believe that in the case of printing, the instruction should be given in a central school, for the reasons that more complete equipment and a more comprehensive teaching organization can be secured, greater co-operation with the industry is possible and better control could be had over the numbers entering training in relation to the needs of the trade.

The extensive and differentiated equipment of such a school would also be of great value in serving other phases of instruction, such as evening classes for journeymen and apprentices and part-time classes for the younger apprentices.

The same considerations obtain in regard to a central school for the machine trades.

The committee feel that instruction in carpentry and electrical work could most effectively be maintained in a central school for the building trades along with other courses in this field. While one such school would, at first, be all that is necessary, other schools could be added as the need became apparent until each borough is provided.

In order to furnish effective vocational training, it is essential that the training shall be given to a group of individuals who have already determined that they wish to be trained for that particular trade or occupation.

A specialized central school backed by the interests of the trade dealing in part-time and trade extension classes and standing before the community as the headquarters of the trade, will present a situation much more likely to attract a group of pre-employment pupils who have already formed their desire to be trained for that particular trade than schools in which this course appears only as an element among other courses.

The contact of pre-employment pupils in such a central school with the higher processes of the trade and with the workers in the trade will exercise a strong influence in retaining their attendance for the full course of pre-employment instruction.

The committee recommends that pupils admitted to these schools shall be at least 14 years of age and have completed at

least the sixth grade of school. They should be required to pass a physical examination based on the particular needs of the trade in question. At the end of the first term all pupils should be rated carefully as to their hand skill and industrial intelligence, and those who fail to give satisfactory promise of success as trade workers should be dropped from the school. The numbers admitted should not exceed the point where the number of graduates will be greater than experience indicates can be absorbed by the trade. When the demand for admission to these schools exceeds the numbers so determined, competitive examinations aimed to test manipulative skill and general intelligence should be used as a basis of selection.

Courses provided in the day schools should include shop training, directly related technical instruction, instruction desirable for citizenship and elements of general education. Material for courses of instruction in shop work and in related subjects are indicated in the analysis of the trades as given in the different surveys.

The committee recommend the organization of courses of instruction on a basis that will require two years for completion as at present. They favor at the same time providing shorter unit courses in machine shop work that will allow pupils who cannot remain for two years to enter the trade as machine hands or operators.

In the matter of the length of school day, the committee feel that this should approach the length of the usual industrial day as nearly as the physical development of the pupil will admit, considerations being had of the time required for traveling back and forth between home and school. They make no recommendation to change the present time of seven hours. The committee believe that there should be provision for this type of training for practically the entire calendar year.

The committee recommended that the number of pupils assigned to one teacher of shop work shall not exceed 16. In regard to the character of the shop work, the committee recommend that in the schools devoted to the printing trades, machine trades, and building trades, there shall be a certain amount of productive work, not for the sake of production, but because in their judgment, experience in productive work is the only fully efficient method of trade instruction. They believe that in many instances such productive work can with advantage be supplemented by technical exercises of the laboratory type.

In the case of the electrical trade, the work would, of necessity, be practically all of the latter type.

The committee recommend that before any further classes in day vocational schools are opened, that equipment should be provided that is sufficient in extent to meet all the needs of the numbers under instruction and of a character and quality that conform to the requirements of modern trade practice.

The committee further submit the following plan to carry the above recommendations into effect: The establishment of a central school for the printing trades; the establishment of a central school for the machine trades; reorganization of the vocational school at 138th Street, Manhattan, as a school for the building trades; discontinuation of the Murray Hill Vocational School; reorganization of the Brooklyn Vocational School as a school for the building trades.

Signed,
CHARLES R. ALLEN,
FRANCIS H. WING,
E. E. MACNARY,
L. H. CARRIS.

EVENING TRADE SCHOOLS

The Brooklyn Evening Technical and Trade School and the Long Island City Evening High and Trade School were opened during the school year of 1905-1906 and three years later a third, the Stuyvesant Evening Trade School, was added. The large increase in the number of evening trade schools came during the years between 1911 and 1914. In 1911-12 the Harlem Evening Trade School was opened; in 1912-1913 the Murray Hill, the Tottenville and the Manhattan Evening Trade School for Girls were opened and in 1913-1914 the New York Evening School of Industrial Arts and the Bushwick Evening School were added. The number during the school year 1916-1917 is the same as in 1913-1914. These nine schools give instruction in the men's trades with the exception of the Manhattan Evening Trade School which is for women and the New York Evening Trade School of Industrial Arts which is for both men and women.

The names of the schools with their distribution by boroughs is given below:

TABLE SHOWING NUMBER AND DISTRIBUTION OF EVENING TRADE SCHOOLS BY BOROUGHS

Borough of Manhattan
- Evening School of Industrial Arts
- Harlem Evening Trade School
- Manhattan Evening Trade School
- Murray Hill Evening Trade School
- Stuyvesant Evening Trade School

Borough of Brooklyn
- Brooklyn Evening Technical and Trade School
- Bushwick Evening Trade School

Borough of Queens
- Long Island City Evening High and Trade School

Borough of Richmond
- Tottenville Evening Trade School

Trade extension courses are also offered in the following evening elementary and high schools:

Borough of Manhattan
- East Side Evening High School
- Harlem Evening High School for Women

Borough of Manhattan
- New York Evening High School for Women
- Public School No. 22
- Public School No. 67
- Public School No. 95
- Washington Heights Evening High School

Borough of Brooklyn
- Central Evening High School for Women
- Bay Ridge Evening High School for Women
- Public School No. 5
- Public School No. 126
- Williamsburg Evening High School for Women

Borough of Bronx
- Bronx Evening High School for Women

Borough of Richmond
- Public School No. 14
- Public School No. 20

COURSES AND CLASSES

Courses offered and number of classes in each school at the beginning of the survey in December, 1916:

TRADE SCHOOLS

Borough of Manhattan

Evening School of Industrial Arts

Book Illustration	2
Costume Design	3
Cast Drawing	1
Decorative Design	1
Jewelry Design	1
Life Drawing	1
Mural Decoration	1
Poster Design	1
Plastic Design	1
Stained Glass Design	1
Textile Design	1
Wash and Catalogue Work	1
Total	15

Harlem Evening Trade School

Auto Mechanics	2
Blacksmithing and Forging	2
Carpentry and Joinery	1
Commercial Design	1
Electric Wiring	8
Plan Reading	2

Borough of Manhattan

Harlem Evening Trade School—Continued

Plumbing	2
Printing	4
Monotype Operating	2
Linotype Operating	2
Mechanical Drawing	2
Machine Shop Work	2
Sheet Metal Drafting	1
Structural Steel Drafting	1
Total	32

Murray Hill Evening Trade School

Architectural Drawing	1
Baking	2
Carpentry and Joinery	2
Commercial Photography	2
Electrical Installation	4
Electrical Engineering	2
Electric Theory—Municipal	1
Gas Engine Mechanics	4
Kelly Press Operating	2
Ladies Garment Design	4
Litho-Photography	2
Machine Shop Theory	3
Mechanical Drawing	1
Motion Picture Mechanics	2
Off-set Printing	2
Printing	2
Player Piano Mechanics	1
Plan Reading	1
Plumbing	4
Structural Steel Design	1
Sheet Metal Drafting	1
Surveying	1
Sign Painting	2
Total	47

Manhattan Trade School for Girls

Drafting	2
Draping	2
Garment Operating	6
Novelty Work	1
Special Machine Operating	2
Straw Machine Operating	2
Total	15

Borough of Manhattan

Stuyvesant Evening Trade School

Architectural Drawing	1
Cabinet Making	2
Carpentry and Joinery	1
Chemistry	4
Electricity—Applied	2
Electric Wiring—Advanced	2
Electric Wiring	4
Freehand Drawing	1
Forging	1
Garment Design	4
Industrial Design	1
Machine Shop Practice	4
Machine Shop Theory	1
Mechanical Drawing	4
Photography	1
Pattern Making	1
Proof Reading	2
Plan Reading	1
Physics	2
Plumbing	4
Structural Engineering	1
Shop Arithmetic	2
Steam Engineering	1
Total	47

Borough of Brooklyn

Brooklyn Evening Trade and Technical School

Automobile Repairing	2
Automobile Equipment	1
Architectural Drawing	1
Blacksmithing	1
Carpentry and Joinery	1
Electrical Installation	5
Mechanical Drawing	5
Machine Shop Work	5
Plumbing	2
Proof Reading	1
Pattern Making	1
Plan Reading	2
Printing	2
Linotype Operating	2
Steam Engineering	1
Trade Dressmaking	2
Trade Millinery	1
Total	35

CLASS IN DRAPING—MANHATTAN EVENING TRADE SCHOOL

Borough of Brooklyn

Bushwick Evening Trade School

Auto Mechanics	1
Applied Physics	1
Carpentry	1
Cabinet Making	1
Chemistry	1
Electrical Installation and Practice	1
Electricity—Applied	1
Freehand Drawing	1
Gas Engine Mechanics	1
Iron Work Forging	1
Mechanical Drawing	7
Machine Shop Practice	4
Plan Reading and Estimating	1
Pattern Making	1
Plumbing	2
Ship Drafting	1
Trade Mathematics	1
Sheet Metal Work	1
Total	28

Borough of Queens

Long Island City Evening High and Trade School

Applied Electricity	1
Architectural Drawing	1
Cabinet Making	1
Gas Engine Mechanics	2
Machine Shop Practice	2
Mechanical Drawing	1
Total	8

Borough of Richmond

Tottenville Evening Trade School

Automobile Repairing	1
Gas Engine Mechanics	1
Mechanical Drawing	1
Tool Making	1
Terra Cotta and Architectural Drafting	1
Terra Cotta Modeling	1
Trade Carpentry	1
Trade Dressmaking	1
Total	8

TRADE CLASSES
EVENING ELEMENTARY AND HIGH SCHOOLS

Borough of Manhattan

East Side High School for Women

Weaving	2

Harlem Evening High School for Women

Costume Design	2
Trade Dressmaking	2
Trade Millinery	2
Total	6

New York Evening High School for Women

Book Binding	1
Costume Design	3
Trade Dressmaking	2
Trade Millinery	1
Trade Embroidery	1
Total	8

Public School No. 67

Auto Mechanics	1
Care and Use of Boilers	1
Electrical Installation	1
Garment Designing	2
Total	5

Public School No. 95

Architectural Drawing	1
Electrical Installation	1
Machine Drawing	1
Machine Shop Practice	1
Modeling	1
Printing	1
Sheet Metal Work	1
Wood Working	1
Total	8

Washington Heights Evening High School

Trade Dressmaking	1
Trade Millinery	1
Total	**2**

Borough of Brooklyn

Central Evening High School for Women

Costume Design	2
Trade Dressmaking	4
Trade Millinery	2
Total	8

Williamsburg Evening High School

Costume Design	2
Dressmaking	4
Total	6

Bay Ridge Evening High School

Dressmaking	2
Millinery	2
Total	4

Public School No. 5

Electrical Installation	1
Power Machine Operating	1
Sheet Metal Work	1
Trade Drawing	1
Total	4

Public School No. 126

Plumbing	2

Borough of the Bronx

Bronx Evening High School

Costume Design	2
Dressmaking	2
Trade Millinery	1
Total	5

Borough of Richmond

Public School No. 14

Plumbing	1
Plan Reading	1
Total	2

Public School No. 20

Plan Reading	1

Director for Evening Schools: A district superintendent is assigned by the city superintendent to be in direct charge of the evening schools. The evening trade schools are only a small part of the total evening school work as the number of classes in these schools is about 8 per cent. of the total number of classes in the evening schools. The present district superintendent assigned to the evening schools has been in charge of the work since 1914. Up to the present time there has been no position created by the Board of Education as director of trade instruction in the evening schools.

Requirements for Admission: Under a rule of the Board of Education the attendance in the evening trade classes is limited to men and women engaged in trade work during the day. Most of the pupils in the classes are over sixteen years of age, although applicants between fourteen and sixteen years of age, having proper legal work certificates, who state that they are working at a trade, are admitted.

The requirement that instruction in evening trade classes be limited to workers at some branch of the trade became effective in the fall of 1916. The rule, however, did not apply to those who were already registered in trade classes and these were permitted to continue in the class as long as they desired. This report shows under the heading "Occupations of the Men," the extent to which this requirement is operative.

The reason why so many different occupations are represented in so many of the trade classes seems due to the fact that the several principals of the evening trade schools do not have the same interpretation of what constitutes a "branch" in some of the trades. A clerk in an electric supply house would in some schools be admitted to classes in electric wiring. In other schools he would not be permitted to enter the class.

For admission to some classes, as proofreading, steam engineering and industrial science, an educational standard is set up in most of the schools.

Advertising: A number of different methods are used to bring the evening trade schools to the attention of the men and women for whom these schools are provided. Most of the schools use display cards and insert advertisements in the newspapers and trade journals. One school has a publicity committee that brings to the attention of the papers such news items concerning

CLASS IN STRAW HAT MACHINE OPERATING—MANHATTAN EVENING TRADE SCHOOL

the evening trade schools as are of general interest. Most of the schools have circularized employers, unions and individual workers. Some schools work mainly through the student body asking each pupil to tell others of the work of the school.

The principal of the Tottenville Evening Trade School in reply to a question asking what methods he followed in securing pupils, gave the following list:

"(a) Circulars, (b) Newspapers, (c) Posters in factories, railroad stations and at ferry slips, (d) Items inserted in technical journals and in special bulletins and papers that are issued in the larger plants, (e) Slides in the moving picture houses, (f) Clubs, unions and schools and various civic bodies addressed in person by the principal, (g) Open evenings so that visitors may see what is being done in the shops and classes, (h) Exhibitions are held to which all the apprentices and journeymen are invited. Recently more than 1,500 attended such an exhibition. (i) News items inserted regularly in the local papers, (j) Personal visits made regularly to the nearby plants." Nearly all of the principals recommended that a general publicity bureau be established at a central office to take charge of the advertising for all the evening school work.

Registration of Pupils: For more than ten years the city superintendent of schools has recommended that a small registration fee be charged pupils desiring to enter the evening school and this recommendation has been supplemented year after year by the district superintendent in charge of evening schools. No action has been taken by the Board of Education on this recommendation.

All principals of the evening trade schools among other questions were asked if they believed that a deposit fee should be required and also were asked their opinion regarding the size of the fee and under what conditions it should be returned. All agreed that a fee should be charged, one going so far as to state that it would do more than any other one thing to raise the work of the school. Their opinions in regard to the amount of the fee that should be required ranged from one dollar to ten dollars. With a single exception the principals agreed that the fee should be returned at the end of the term if the pupils' record for attendance and scholarship has been satisfactory.

The principals seemed to feel that more time should be allowed for the examination of the pupils in order that they might be

classified and graded more accurately. One principal stated that in his opinion it would be very desirable to have a teacher of each type of class present during the period of registration to confer with the pupils and help them to secure just the work they needed.

Popularity of Subjects: That some trade subjects attract more pupils than do other subjects is a fact that is well known to those who have had experience in the evening school work. The comparative popularity of subjects in the evening trade schools as shown by the number of classes and the average attendance for each trade group is shown in the table below.

TABLE SHOWING THE AVERAGE ATTENDANCE AND THE NUMBER OF CLASSES IN EACH OF THE TRADE GROUPS OF THE EVENING TRADE SCHOOLS:

	1914 Av. Att.	1915 Av. No. Cl.	1915 Av. Att.	1916 Av. No. Cl.
Engine work	109	7.4	83	5.4
Printing trades	203	9.8	148	8
Metal work	239	12.2	205	10.4
Wood work	247	13.1	177	9.6
Women's occupations	306	14.5	221	9.2
Industrial arts	258	15.6	196	12.0
Electric trades	525	23.5	366	18.9
Industrial sciences	611	25.7	478	19.4
Special trades	459	28	357	22.8
Drawing and design	712	36.1	723	25.9

Establishment of Courses: When 15 or more persons desire a particular kind of trade instruction in a certain trade school, the principal of that school sends in a request that the class be established. If the superintendent in charge of the evening schools, or the board of examiners, do not feel that this is giving a course already established a new name, the request is granted and the class is authorized. The report for the evening schools for 1915-1916 lists over 70 different kinds of trade courses in which instruction was given that year.

Length of Courses: The evening trade schools are in session four nights a week for thirty weeks but no pupil is permitted to attend more than two nights a week. The schools are really duplicate schools, one section meeting on Monday and Wednesday nights and the other section on Tuesday and Thursday nights.

CLASS IN TEXTILE DESIGN—EVENING SCHOOL OF INDUSTRIAL ART

However, the pupils enrolled in the Evening School of Industrial Arts and the pupils in a few special classes in the other trade schools are allowed to attend four nights. Practically all the evening trade courses are sixty nights in length.

The limitation of attendance of the students to two nights a week has been in effect less than two years and has met with considerable opposition. Each of the principals of the evening trade schools was asked whether in his opinion his school was more or less effective because of the change. While most of the principals agreed that the two nights a week plan was an improvement, two of them were most emphatic in declaring that two nights a week do not afford sufficient time to do the work.

Organization of Evening Trade Classes: The wide range in previous school training and trade experience of the pupils in the evening trade classes make it a very difficult problem to so organize the classes as to do efficient work. Where the school sets up a definite course, or program, to meet a definite need, such as the operating of a special machine, or the passing of an examination necessary to secure a trade license, the pupils in attendance were quite evenly graded in regard to their occupations, training and experience. On the other hand where the course was not definite in aim, a wide diversity of occupations was shown.

Of the first type were the classes in lithography and garment design and most of the classes in machine shop practice and plumbing. Of the second type were many of the classes in drawing and electric wiring, the wood working classes and those in industrial science such as physics, chemistry and trade mathematics.

One class in shop mathematics was composed of one blacksmith, five machinists, one copy boy, four oilers, one errand boy, one grocery clerk, one engineer, one lathe hand, one restaurant man, one machinists' helper, one tailor, one elevator man, one clerk and one draftsman. On the night when the class was visited, the teacher was giving a lesson in sheet metal problems.

There were four office boys, one pattern maker's apprentice, three junior draftsmen, one bookkeeper, one mason, one plumber's helper, three clerks, one iron worker's helper and three carpenters registered in a course in architectural drawing. One man who was a plumber was interviewed with regard to the work which he was doing and he said he was working "problem

number twenty-three." Examination of his work showed that he had copied twenty-two geometrical problems.

Another example of diversity of occupations is shown in a class of cabinet making. This class was made up of one insurance man, one telephone repair man, three clerks, one cabinet maker, one bookbinder, two machinists, one baby carriage manufacturer, one press feeder, one shipwright, and one boy engaged in making blue prints. The work of this class consisted largely in making small pieces of furniture.

The distribution for each of the more largely attended trade classes is shown in the "Summary of Other Trade Groups" under the "Occupations of Students."

Size of Classes: Except in the case of the Tottenville Evening Trade School which has but a limited population upon which to draw and in special cases where the director of the evening school thinks it advisable to continue a class longer, a trade class is either combined or discontinued when the average attendance falls below 15 pupils. The table below shows the average attendance per class for each of the principal trade groups taught in the evening trade schools.

TABLE SHOWING AVERAGE ATTENDANCE

	1913-14	1914-15	1915-16
Wood work	15.4	18.9	18.4
Metal work	17.7	18.8	19.7
Electrical trades	21.9	22.3	19.4
Printing trades	22.5	20.7	18.5
Engine work	16.7	14.7	15.4
Special trades	15.7	16.4	19.5
Drawing	19.5	20.0	24.0
Women's occupations	20.2	21.1	16.3
Industrial art	16.9	16.5	

Courses of Study: No one topic has received so much space in recent years in the report of the district superintendent in charge of evening schools as has the course of study in the evening trade classes. The report on evening schools for the year 1911-1912 devotes 20 pages to a discussion of evening trade instruction in which it is advocated that "the utmost latitude should be allowed principals in modifying a course so that, so far as possible, the teaching may suit the needs of each learner whether he requires the knowledge of a whole course or only

certain specific parts of it." A list is given of 44 shorter courses in trade subjects to be given for the following year. The 1912-1913 report gives nine pages to "Industrial Education" in which the value of the short unit course is clearly set forth and a list given of 12 additional short courses that had been prepared for trade subjects. The 1913-1914 report was prepared during the interval between the resignation of Dr. Shiels and Mr. Jenkins' assignment to the work of the evening schools and consists largely of the statistical tables in regard to attendance. In his first report, that for the year 1914-1915, Mr. Jenkins in describing "Short Unit Courses in Trade Schools," says: "I feel that the success of the 'Short Unit Course' has not been what might have be different from the mechanical drawing taught in South account of the appointment of teachers and their continuation in service. We may need to vary these, but this form of trade course I believe to be so valuable and economic that next session special attention should be paid to its development and improvement." Some of the reasons given for the lack of success with the unit courses were: (1) that the attendance for a short unit course made a poor showing on the final annual report, (2) selecting the right men for the courses was a serious problem, (3) teachers are out of employment when a class disappears and naturally desire to hold a class for as long a period as possible, and (4) there is much difficulty in analyzing the subject matter of any trade course into short units.

In the Evening School Report for 1915-1916 Mr. Jenkins states: "I recommend during the coming season that short unit courses be thoroughly worked out. For this purpose it will be necessary to have standardized courses of study. The first step to be taken should be the sending out of a circular to all teachers with a request to prepare complete courses of study in their special subjects based upon their experience. Group conferences of the teachers of the various subjects should be held for the purpose of discussion and the organization of small committees to draw up standard courses of study. There is no reason in the world why mechanical drawing taught in Harlem should be different from the mechanical drawing taught in South Brooklyn."

During the session of 1916-1917, five years after the 44 shorter courses in trade subjects were worked out, the members of the survey staff were able to find but little results of the five years' agitation so far as short unit courses were concerned. The

courses in the Manhattan Evening Trade School for Women were all short unit courses of from 5 to 30 nights in length and have been since the opening of the school. In the Murray Hill Evening Trade School a 24-night course was offered in Kelly press operating and the courses in plan reading in some evening schools were short units arranged for the men of different grades.

The reply of one of the principals to a question in regard to the result of his experience with short unit courses sheds some light on why they are not being used more extensively.

"The short unit courses, in my opinion, are a pure bluff, Five years ago under the direction of Superintendent Shiels, three of the principals of the trade schools drafted the short course circular rather under protest and because of the country-wide demand and claim that it was the solution for the evening school problem. All of us who helped to draft that circular expressed to Mr. Shiels that the outlines suggested were no more than mere excerpts from the various syllabi given during the winter by the several teachers, and that on paper these short outlines might catch the eyes of interested individuals who might apply, become interested and, once enlisted in the course, we would hope to retain them. In New York City, with its diversified groups of specialized industries, none of which are certainly located or grouped in large individual concerns, we have never been able to find any real topic which could be listed as a short course to be taken by a suitably sized class."

This discussion of the short unit course is perhaps partly responsible for the fact that many excellent courses of study in trade subjects were found in the evening trade schools. With few exceptions each teacher visited was following a course of study which he had prepared and was aiming to cover a certain amount of this course each night. Being prepared individually however, there was little agreement between the courses of study in the same subject in the different schools.

Method of Selection, Tenure and Salary of Evening Trade School Teachers: The teachers of the evening trade schools, as in all other departments of the New York City school system, are appointed from an eligible list which is made by the board of examiners. The board of superintendents nominates from this list persons to fill such positions as are authorized by the Board of Education and their nominations are presented to the Board of Education for its approval. A teacher who has received an

CLASS IN MOTION PICTURE MECHANICS—MURRAY HILL EVENING TRADE SCHOOL

appointment to teach in an evening trade school as well as all other evening schools, is rated by the principal of the school "for instruction, disciplining and ability to hold the class." The number of times he has been absent or tardy is also certified to by the principal at the end of the year. A teacher who has a satisfactory attendance record and whose teaching has not been called into question by the principal of the evening trade school, or the district superintendent, is replaced on the next season's list together with those teachers on the eligible list who were not reached and not appointed. The responsibility is placed upon the principal of the school for having satisfactory teachers as no teacher is re-appointed to an evening school unless the principal of that school desires his services.

The salary schedule for the evening trade schools is the same as that for the evening high school, all teachers receiving five dollars an evening.

Supervision of Evening Trade Classes: A fuel engineer in the department of supplies has been supervisor of the evening trade classes and trade equipment since October, 1914. His work is general in its nature and there has been no special supervision of the instruction given in the several trade groups other than the supervision which each of the evening school principals has been able to accomplish. The district superintendent in charge of the evening schools, replying to questions regarding the supervision of the evening trade classes, said: "The supervisor of the trade classes and trade equipment observes and inspects various kinds of trade classes and makes reports to me. The general supervision, however, of the trade classes is left to the principal who is a slected expert and presumably competent to supervise the work.

"At present I am satisfied with the amount of supervision that we have. Later I should like supervisors representing various general trades to work each a certain number of evenings in supervision. By general trades I mean one printing expert who would examine into all the classes that have anything to do with that trade. An expert supervisor of all machine work including forging and blacksmithing, etc., also supervisors and experts on electrical work."

The principals of the evening trade schools were divided on the subject of supervision. Some of them thought that this was

the work of the principal while others expressed the feeling that special supervisors were needed for each of the important trade subjects.

Advisory Committees from the Trades: In the report on the evening schools for the year 1911-12 several pages are devoted to the value of "Co-operative Agencies in Evening School Instruction." After discussing the desirability of co-operation with the employers of all who attend the evening schools, Dr. Shiels further says: "In the trades the sympathy and co-operation of the unions is equally necessary. An arrangement was made with the Pattern Makers' Union by which the Union agreed to direct its apprentices to attend a class in pattern making; the Union itself will co-operate with the principal and in conjunction with the Department of Education will certify to the proficiency of students; this arrangement will be carried out next season. It is possible that the Board of Education may extend the policy thus begun to other bodies whether of employers or employees." The report of the year 1912-1913 states: "The work provided for in the agreement between the Pattern Makers' Union and the Department of Education has been initiated and successfully continued so that the Brooklyn apprentices now attend evening school." The reports of the evening school for the next three years do not mention the subject.

One of the principals in replying to a question in regard to co-operation between the evening trade schools, the employers and unions made this statement: "Five years ago Superintendent Straubenmuller, five principals and fifteen representatives of the Pattern Makers' Union had at least two meetings at the Hall of the Board of Education the outcome of which was that thereafter all apprentices for pattern makers would be compelled to attend an approved school in the evenings for instruction in their subject during their complete apprenticeship of four years. At that time we felt that a very great step had been made in the co-operation, but I believe because the Union could not have its choice as to teachers named in the several schools no interest whatever was taken in sending apprentices to our schools."

The district superintendent in charge of evening schools, was asked if he considered it advisable, or possible, to secure the co-operation of employers' associations and unions in developing evening trade school courses of study and to what extent he had been able to secure this co-operation. In reply he stated: "It

CLASS IN GARMENT DESIGNING—MURRAY HILL EVENING TRADE SCHOOL

is in the highest degree advisable and it is entirely possible to secure the co-operation of employers' associations and unions in developing evening trade school courses of study. The Murray Hill Evening Trade School represents excellent work in this direction and those schools which do not have it owe it to the lack of effort, or properly directed effort, of the one in charge of the school. The Evening School of Industrial Arts, the Murray Hill Evening Trade School, the Brooklyn Technical and Trade and the Harlem Evening Trade are fine examples of the extent to which we have been able to secure this co-operation and the results are due entirely to the efforts of the principals. My share is confined to suggestion and the encouragement of the principal."

These questions have been included to show that the matter of advisory committees has been left to the principal of the evening trade school. In a restricted occupation, such as lithography, where the work is confined to a single trade school and the instruction is highly specialized, the co-operation between the employers, the union and the school is very marked. In the Evening School of Industrial Arts the subjects taught, such as book illustrating, mural decoration and designing for stained glass, jewelry and posters are for small groups of workers. In this school each department has a board of advisors who are practical men, active in their respective trades. In the large work of the evening trade schools where subjects, such as electrical work, machine shop practice, printing, etc., are taught in several different schools, neither the employers as represented by their association, nor the employees as represented by their unions, have influenced to any appreciable extent the kind of instruction that is offered in the evening trade schools.

Study of the Evening Trade School Pupils: A questionnaire was prepared by the survey staff that was filled out by over 4,500 men and women who were attending the evening trade classes. The number of men who filled out the blanks for the most largely attended trades is given in the following table:

TABLE SHOWING NUMBER OF MEN IN EACH TRADE WHO REPLIED TO QUESTIONS ASKED OF THOSE ATTENDING EVENING TRADE CLASSES

Electric Wiring	495
Mechanical Drawing	452
Machine Shop Practice	418
Printing	367
Plumbing	287
Garment Design	211
Automobile Repair	197
Carpentry and Joinery	90
Cabinet Making	79
Pattern Making	54

Since a larger number of reports were received from the men attending the classes in electric wiring than from those attending any of the other trade classes and also because electric wiring was one of the four trades of which a special survey was being made, a summary of the answers of the men in this trade is given in this report of the evening school. In another section will be found the summary for some of the other trades.

DESCRIPTION OF THE MEN ATTENDING EVENING CLASSES IN ELECTRIC WIRING

Ages of Students

14 years	7	20 years	39
15 years	19	21 to 25 years	96
16 years	49	25 to 30 years	34
17 years	80	30 to 35 years	19
18 years	72	35 to 40 years	11
19 years	51	40 years and over	11

It will be seen that more than half of the men attending these classes are not over 19 years of age. Half of those attending the classes in mechanical drawing were 18 years of age or younger. In the machine shop classes and the plumbing classes those who were 21 years of age needed to be taken to include half of the class and in the classes in garment design and carpentry and joinery the middle division came at 24 years.

Nationality and Parentage of Students: In the electric wiring classes 103 were native born of native parentage, 226 were

native born of foreign or mixed parentage, and 166 were foreign born. The distribution of the men according to nationality in the other trade classes (with the exception of garment design where nine-tenths of the men were foreign born) did not differ widely from that of the men in the electric wiring classes. Speaking in general terms, 17 per cent. of the men in the evening trade classes were native born, 42 per cent. were native born of foreign or mixed parentage and 41 per cent. were foreign born.

Previous School Training: The grade which the men attending the evening electric wiring classes had reached in the day school was given by them as follows:

Grade Completed by Men Attending Electric Wiring:

Classes below 6th grade	27	1st year in high school	11
Sixth grade	40	2nd year in high school	12
Seventh grade	116	3rd year in high school	3
Eighth grade	49	4th year in high school	3
Eighth grade graduate	209	High school graduates	1

Half of the men in the electric wiring classes who answered this question had finished the eighth grade, but only six percent of them had had any high school training.

In no other class, with the exception of printing, where 50 percent of the men had completed the eighth grade and in mechanical drawing, where 60 percent of the men were elementary school graduates, had so large a percentage of the men attending the evening classes reached as high a grade in the day school. In the machine shop and cabinet making classes more than half of the men had left school before finishing the eighth grade, and in carpentry and joinery and plumbing, half of the men had not gone further than the seventh grade before going to work.

Occupations of the Men: Under the organization of the evening school system which went into effect with the opening of the winter session on January 3, 1916, only those actually engaged in the trade in which instruction was desired were to be admitted to the evening trade classes. The occupations as given by 487 of the men in the electrical classes are given below:

Note—Many of the men in attendance in the trade classes failed to answer all questions on the questionnaire and as a result the totals do not check.

Occupations of the Men Attending Electric Wiring Classes:

Asst. Engineer	1	Machinist	12
Auto Engineer	3	Mechanic	9
Brush Maker	1	Organ Builder	2
Clerks	49	Packer	1
Clothing	4	Perfumer	1
Chauffeur	3	Photography	1
Cutter	1	Picture Framing	1
Carpenter	3	Piano Maker	2
Driver	2	Plumber	1
Draftsman	1	Porter	5
Electricians		Printing	6
Journeymen	34	Press Hand	1
Helpers	220	Repair Man	1
Apprentices	60	Roofer	1
Elec. Machinst	3	Salesmen	2
Elec. Supplies	2	Shopwork	1
Electro Plater	1	Silversmith	1
Elevator Operator	6	Stationery Engineer	4
Elevator Repair	5	Steam Engineer	1
Engineer	3	Surgical Instruments	1
Errand Boy	1	Telephone Operator	5
Expressman	1	Telephone Installation	3
Houseman	2	Tinsmith	1
Instrument Maker	3	Trunk M'f'g.	1
Janitor	8	Typist	1
Laborer	1	Waiter	1
Laundry	1	Wireman	1
Longshoreman	1		

As will be noted in the table above, about three-fifths of the men gave their occupation as electricians, although it is probable that a number working part or all their time at electrical work in some industrial plant gave the industry as their occupation rather than electrical work.

This wide range of occupations was noted in other trade classes showing the great difficulty that has been encountered in making these classes entirely trade extension work. The classes in mechanical drawing registered men from over 60 different occupations, 63 of the men stating that they were clerks. Twelve of the 79 men in the cabinet making classes stated that they were cabinet makers and 29 others were in allied wood working trades as carpenters, boat builders, etc. Of the 419 men in the machine shop classes who gave their occupations, 350 stated that they were machinists and 28 more were metal workers. All but

five of the men in the plumbing classes stated that they were plumbers and all but five of the men in the garment design classes were tailors working at the garment trade as cutters, operators, etc.

Number of Years Worked at Trade: Each man was asked how many years he had worked at the trade, the object of the question being to determine whether the evening school was most attractive to apprentices, helpers or journeymen. This information for the electrical classes is given in the table below:

Number of Years Worked at the Trade:

One year	236	Six to ten years	36
Two years	85	Ten to fifteen years	7
Three years	32	Fifteen to twenty years	2
Four years	32	Twenty years or over	1
Five years	26		

As will be seen from the above table practically half of the men attending the electric wiring classes were working the first year at the trade, and, as was given in the table on occupations, only 34 men stated that they were journeymen. Also in mechanical drawing, and automobile work, half of the men in the classes were working the first year at the trade. About one-third of those attending the machine shop and cabinet making classes, one-fourth of the men in the carpentry classes, one-fifth of the men in plumbing stated that they had worked a year or less at the trade. These facts in regard to the number of years the men have worked at the trade, taken in connection with the age of those attending the evening classes and the number of men enrolled for each trade subject, seem to show that the large enrollment for the classes in electrical wiring and mechanical drawing is because the classes in these two subjects are filled largely with boys and young men whose experience and knowledge of the trade are very limited.

Length of Working Day: Most of the men attending the evening trade classes work eight hours a day, although the nine-hour day is not uncommon. The table below shows the distribution in regard to the number of hours worked each day by the men in the five largest trade groups.

Showing Length of Working Day of Men Enrolled in Evening Trade Classes:

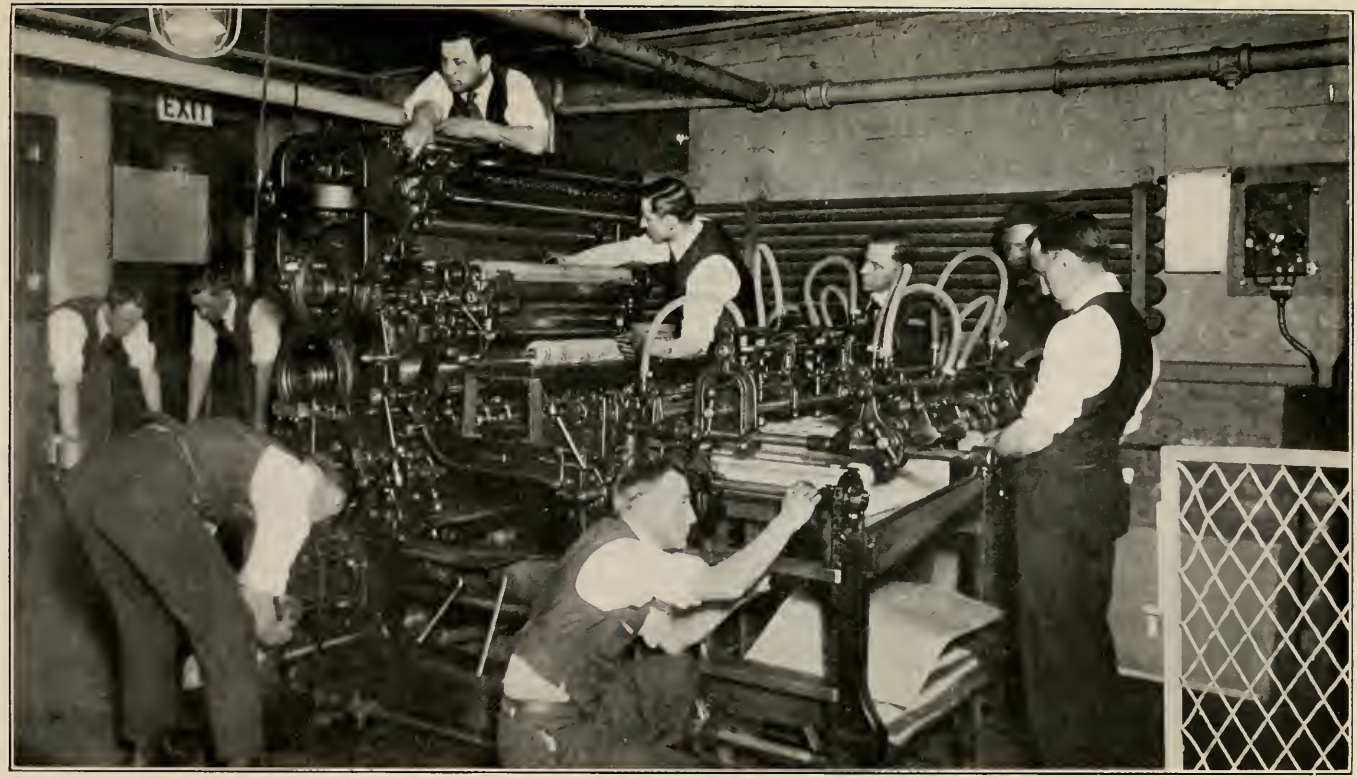
	8 hours	9 hours	10 hours
Electric Wiring	277	151	59
Mechanical Drawing	239	168	32
Machine Shop	170	198	30
Plumbing	272	8	2
Garment Design	44	158	8
Total	1002	683	131

Weekly Wages: Although no effort was made to determine the accuracy of the replies the men made to this question, the information is illuminating in showing how many men attending the evening trade classes are receiving the wages of apprentices and helpers and how few are receiving the wage of a journeyman. Not all of the men attending the evening classes answered the question, some of them feeling that the wage they received was more personal than the other questions on which information was sought.

The information concerning the wages of the men in the electric wiring classes is tabulated below:

Weekly Wage	Number	Weekly Wage	Number
$ 2.50 to $ 5.00	14	$15.00 to $17.50	21
5.00 to 7.50	66	17.50 to 20.00	20
7.50 to 10.00	148	20.00 to 22.50	12
10.00 to 12.50	68	22.50 to 25.00	8
12.50 to 15.00	86	25.00 to 30.00	6

It will be seen that over half of the men attending the electric wiring classes receive less than ten dollars a week and less than six percent of the men in these classes receive as much as $20 a week. The men attending the mechanical drawing classes were earning even less. Fifty-three percent of these men were earning less than ten dollars a week, and but seven percent were earning $20 a week and over. It had previously been noted that the men attending the classes in plumbing, machine shop practice and carpentry were older than the men attending the electric wiring and mechanical drawing classes and had worked years at the trade. This was reflected in the wages given. About 37 percent of those attending the plumbing classes received less than ten dollars a week and thirteen percent receive more than twenty dollars. Of the men in the machine shop classes about one-fourth earned less than ten dollars a week and 16 percent



CLASS IN THE MECHANICS OF THE OFFSET PRINTING PRESS—MURRAY HILL EVENING TRADE SCHOOL

earned $20 a week and over. Twenty percent of those who filled out the blanks in the carpentry classes stated that they were earning less than $10 a week and 25 per cent gave their weekly wage at $20 or more.

Length of Attendance: The teachers of the evening trade classes furnished the number of evenings each of the 4,500 men had attended during the term in order that the length of time the average man will remain in an evening trade school might be determined. Most of those who come have a definite reason for attending. If they secure the kind of work they desire they leave as soon as they have attained the object of their coming. If they fail to find just what they are looking for they leave all the sooner. The number of nights of attendance of the men in the seven largest trade groups is shown in the table below:

	Electric Wiring	Mechanical Drawing	Machine Shop	Garment Design	Auto Repair	Carpentry & Joinery	Plumbing.
1 to 5 nights.....	15	34	13	5	9	3	5
5 to 10 nights.....	13	33	28	11	19	4	24
10 to 15 nights.....	25	39	45	12	26	6	38
15 to 20 nights.....	32	39	46	29	32	17	29
20 to 30 nights.....	75	33	79	73	57	21	44
30 to 40 nights.....	132	85	88	71	66	17	76
40 to 50 nights.....	166	104	100	34	25	29	56
50 to 60 nights.....	20	25	13	2	1	3	10
Total	478	392	412	237	235	100	282

It will be noted that half of the men in the plumbing, electric wiring and mechanical drawing classes attended for 30 or more nights, but in the other trade subjects listed in the table less than half of the men were present for over 30 nights.

SUMMARY OF OTHER TRADE GROUPS

The following tables show certain significant facts concerning the ages, birthplace, previous school training, occupations, years worked at the trade, length of working day, weekly wages, and attendance of those enrolled in the larger trade classes.

These tables are presented in order that the reader may secure some idea of the training and experience of pupils enrolled in the evening trade schools.

MECHANICAL DRAWING CLASSES

AGES

14 years	9	21 to 25 years	69
15 years	39	25 to 30 years	21
16 years	72	30 to 35 years	9
17 years	91	35 to 40 years	9
18 years	52	40 to 45 years	1
19 years	47	45 years or over	1
20 years	36		

PLACE OF BIRTH AND PARENTAGE

Native born—Native parentage	93
Native born—Foreign or mixed parentage	220
Foreign born	139
	452

PREVIOUS SCHOOL TRAINING

Day School

Below 6th grade	10	1st year high school	27
6th grade	35	2nd year high school	23
7th grade	77	3rd year high school	3
8th grade	50	4th year high school	5
8th grade graduate	190	High school graduates	0

Night School

General Courses		Trade Courses	
1 year	42	1 year	67
2 years	10	2 years	10
3 years	4	3 years	7

OCCUPATIONS

Machinists:	
Apprentices	69
Helpers	85
Journeymen	73
Machine Hands	12
Mechanics	6
Electricians	11
Engineers	3
Piano Manufacturers	4
Clerical Work	63
Blacksmiths	7
Craftsmen	18
55 other occupations	105
	475

MECHANICAL DRAWING CLASSES—Continued

NUMBER OF YEARS WORKED AT TRADE

1 year	234	6 to 10 years	45
2 years	64	10 to 15 years	13
3 years	33	15 to 20 years	7
4 years	26	20 to 25 years	5
5 years	17		

LENGTH OF WORKING DAY

8 hours....239	9 hours....168	10 hours.... 32

WEEKLY WAGES

$2.50 to $5.00	16	$20.00 to $22.50	10
5.00 to 7.50	91	22.50 to 25.00	13
7.50 to 10.00	111	25.00 to 27.50	3
10.00 to 12.50	50	27.50 to 30.00	4
12.50 to 15.00	45	30.00 to 32.50	0
15.00 to 17.50	25	32.50 to 35.00	0
17.50 to 20.00	46	Over 35.00	1

LENGTH OF ATTENDANCE

1 to 5 nights	34	30 to 40 nights	85
5 to 10 nights	33	40 to 50 nights	104
15 to 20 nights	39	50 to 60 nights	11
10 to 15 nights	39	Over 60 nights	14
20 to 30 nights	83		

MACHINE SHOP CLASSES

AGES

14 years	1	21 to 25 years	119
15 years	8	25 to 30 years	73
16 years	19	30 to 35 years	25
17 years	35	35 to 40 years	21
18 years	49	40 to 45 years	3
19 years	32	45 years or over	3
20 years	34		

PLACE OF BIRTH AND PARENTAGE

Native born—Native parents	52
Native born—Foreign or mixed parentage	180
Foreign born	186
	418

PREVIOUS SCHOOL TRAINING

Day School

Below 6th Grade	37	1st year high school	9
6th grade	44	2nd year high school	9
7th grade	74	3rd year high school	7
8th grade	64	4th year high school	2
8th grade graduates	132	High school graduates	2

MACHINE SHOP CLASSES—Continued

PREVIOUS SCHOOL TRAINING—Continued

Evening School

General Courses		Trade Courses	
1 year	69	1 year	41
2 years	26	2 years	20
3 years	11	3 years	9
4 years	2		
5 years	1		
6 years	1		

OCCUPATIONS

Machinists:	
Apprentices	45
Helpers	95
Journeymen	130
Bench Hands	17
Machine Hands	28
Metal Workers	23
Auto Mechanics	5
Draftsmen	4
Mechanics	3
Cabinet Makers	3
Tool and Instrument Makers	13
19 other occupations	34
	430

NUMBER OF YEARS WORKED AT TRADE

1 year	145	6 to 10 years	64
2 years	61	10 to 15 years	22
3 years	50	15 to 20 years	11
4 years	37	20 to 25 years	3
5 years	30	25 years or over	1

LENGTH OF WORKING DAY

8 hours.....170	9 hours.....198	10 hours..... 30

WEEKLY WAGES

$2.50 to $5.00	7	$20.00 to $22.50	33
5.00 to 7.50	22	22.50 to 25.00	26
7.50 to 10.00	85	25.00 to 27.50	3
10.00 to 12.50	55	27.50 to 30.00	5
12.50 to 15.00	78	30.00 to 32.50	1
15.00 to 17.50	51	32.50 to 35.00	1

LENGTH OF ATTENDANCE

1 to 5 nights	13	20 to 30 nights	79
5 to 10 nights	28	30 to 40 nights	88
10 to 15 nights	45	40 to 50 nights	100
15 to 20 nights	46	50 nights or over	13

PLUMBING CLASSES

AGES

15 years	3	21 to 25 years	100
16 years	12	25 to 30 years	29
17 years	35	30 to 35 years	8
18 years	34	35 to 40 years	6
19 years	23	40 to 45 years	3
20 years	30	45 years or over	3

PLACE OF BIRTH AND PARENTAGE

Native born—Native parentage	48
Native born—Foreign or mixed parentage	133
Foreign born	106
	287

PREVIOUS SCHOOL EXPERIENCE

Day School

Below 6th grade	33	1st year high school	2
6th grade	24	2nd year high school	4
7th grade	77	3rd year high school	1
8th grade	41	4th year high school	1
8th grade graduates	67	High school graduates	2

General Evening School Work		Evening Trade School Work	
1 year	39	1 year	33
2 years	12	2 years	10
3 years	3	3 years	6
4 years	1		

OCCUPATIONS

Employers	2
Pipe Fitters	3
Plumbers:	
Apprentices	15
Helpers	193
Journeymen	63
Metal Workers	1
Stationary Engineer	1
Civil Engineer	1
Clerk	1
Jewelry	1
	281

NUMBER OF YEARS WORKED AT TRADE

1 year	64	6 to 10 years	45
2 years	58	10 to 15 years	11
3 years	40	15 to 20 years	4
4 years	34	20 years or over	3
5 years	32		

PLUMBING CLASSES —Continued

LENGTH OF WORKING DAY

8 hours	272	9 hours	8	10 hours	2

WEEKLY WAGES

$2.50 to $5.00	5	$20.00 to $22.50	16
5.00 to 7.50	15	22.50 to 25.00	8
7.50 to 10.00	82	27.50 to 30.00	0
10.00 to 12.50	62	30.00 to 32.50	8
15.00 to 17.50	10	32.50 to 35.00	1
17.50 to 20.00	35	Over $35.00	1

LENGTH OF ATTENDANCE (TO MARCH 28, 1917)

1 to 5 nights	5	20 to 30 nights	44
5 to 10 nights	24	30 to 40 nights	76
10 to 15 nights	38	40 to 50 nights	56
15 to 20 nights	29	Over 50 nights	10

GARMENT DESIGN CLASSES

AGES

17 years	5	25 to 30 years	57
18 years	8	30 to 35 years	23
19 years	8	35 to 40 years	18
20 years	9	40 to 45 years	5
21 to 25 years	97	45 years and over	3

PLACE OF BIRTH AND PARENTAGE

Native born—Native parents	1
Native born—Foreign or mixed parentage	26
Foreign born	184
	211

PREVIOUS SCHOOL TRAINING

Day School

Large percentage attended school abroad; records incomplete.

Evening School

General Courses		Trade Courses	
1 year	60	1 year	7
2 years	17	2 years	1
3 years	18		
4 years	4		
5 years	3		

OCCUPATIONS

Tailors	87
Cutters	97
Operators	38
Waist Making	6

GARMENT DESIGN CLASSES—Continued

OCCUPATIONS—Continued

Hatters	18
Clerks	2
Foremen	2
Furrier	1
Hair Goods	1
Pattern Designer	1
Chauffeur	1
	254

NUMBER OF YEARS WORKED AT TRADE

1 year	10	6 to 10 years	82
2 years	16	10 to 15 years	43
3 years	27	15 to 20 years	8
4 years	21	20 to 25 years	7
5 years	16	25 and over	3

LENGTH OF WORKING DAY

8 hours 44	9 hours 158	10 hours 8

WEEKLY WAGES

$5.00 to $7.50	2	$20.00 to $22.50	149
7.50 to 10.00	12	22.50 to 25.00	12
10.00 to 12.50	17	25.00 to 27.50	24
12.50 to 15.00	41	27.50 to 30.00	15
15.00 to 17.50	17	30.00 and over	1
17.50 to 20.00	60		

LENGTH OF ATTENDANCE

1 to 5 nights	5	20 to 30 nights	73
5 to 10 nights	11	30 to 40 nights	71
10 to 15 nights	12	40 to 50 nights	34
15 to 20 nights	29	50 to 60 nights	2

AUTOMOBILE WORK CLASSES

AGES

14 years	7	21 years to 25	53
15 years	6	25 years to 30	25
16 years	14	30 years to 35	23
17 years	16	35 to 40 years	14
18 years	21	40 to 45 years	9
19 years	21	45 to 50 years	3
20 years	14	50 years or over	3

PLACE OF BIRTH AND PARENTAGE

Native born—Native parentage	49
Native born—Foreign or mixed parentage	94
Foreign born	54
	197

AUTOMOBILE WORK CLASSES—Continued

PREVIOUS SCHOOL TRAINING

Day School

Below 6th grade	16	1st year high school	24
6th grade	17	2nd year high school	8
7th grade	41	3rd year high school	1
8th grade	26	4th year high school	1
8th grade graduates	56	High school graduates	7

Evening School

General Courses:		Trade Courses:	
1 year	29	1 year	55
2 years	5	2 years	3
3 years	1	3 years	3
4 years	1	4 years	1
5 years	1		

OCCUPATIONS

Auto-Repairmen	61
Machinists	50
Chauffeurs	12
Clerks	21
Mechanics	23
Electricians	7
20 other occupations	24
	198

NUMBER OF YEARS WORKED AT TRADE

1 year	89	6 to 10 years	19
2 years	33	10 to 15 years	15
3 years	19	15 to 20 years	4
4 years	11	20 to 25 years	3
5 years	15	25 years or over	2

WEEKLY WAGES

$2.50 to $5.00	8	$20.00 to $22.50	6
5.00 to 7.50	21	22.50 to 25.00	10
7.50 to 10.00	20	25.00 to 27.50	3
10.00 to 12.50	30	27.50 to 30.00	1
12.50 to 15.00	28	30.00 to 32.50	0
15.00 to 17.50	14	32.50 to 35.00	3
17.50 to 20.00	22	35.00 or over	1

LENGTH OF ATTENDANCE

1 to 5 nights	9	20 to 30 nights	57
5 to 10 nights	19	30 to 40 nights	66
10 to 15 nights	26	40 to 50 nights	25
15 to 20 nights	32	50 to 60 nights	1

CARPENTRY AND JOINERY CLASSES

AGES

16 years	3	21 to 25 years	21
17 years	4	25 to 30 years	19
18 years	10	30 to 35 years	13
19 years	10	35 to 40 years	9
20 years	4	40 years or over	3

PLACE OF BIRTH AND PARENTAGE

Native born—Native parentage	15
Native born—Foreign or mixed parentage	31
Foreign born	44
	90

PREVIOUS SCHOOL TRAINING

Day School

Below 6th grade	8	1st year high school	2
6th grade	7	2nd year high school	1
7th grade	28	3rd year high school	1
8th grade	10	4th year high school	1
8th grade graduates	24	High school graduates	3

Evening School

General Courses:		Trade Courses:	
1 year	8	1 year	20
2 years	4	2 years	6
3 years	2	3 years	2
	14	4 years	1
			29

OCCUPATIONS

Carpenters	36
Cabinet Makers	3
Ship Carpenters	2
Piano Makers	3
18 other occupations	28
	72

NUMBER OF YEARS WORKED AT TRADE

1 year	21	5 years	6
2 years	13	6 to 10 years	18
3 years	9	10 to 15 years	12
4 years	6	15 to 20 years	6

LENGTH OF WORKING DAY

8 hours	47	9 hours	35	10 hours	8

CARPENTRY AND JOINERY CLASSES—Continued

WEEKLY WAGES

$2.50 to $5.00	1	$20.00 to $22.50	7
5.00 to 7.50	3	22.50 to 25.00	6
7.50 to 10.00	15	25.00 to 27.50	3
10.00 to 12.50	11	27.50 to 30.00	3
12.50 to 15.00	24	30.00 to 32.50	2
15.00 to 17.50	4	32.50 to 35.00	1
17.50 to 20.00	11		

LENGTH OF ATTENDANCE

1 to 5 nights	3	20 to 30 nights	21
5 to 10 nights	4	30 to 40 nights	17
10 to 15 nights	6	40 to 50 nights	29
15 to 20 nights	17	50 nights and over	3

CABINET MAKING CLASSES

AGES

16 years	4	21 to 25 years	15
17 years	9	25 to 30 years	10
18 years	11	30 to 35 years	4
19 years	7	35 to 40 years	3
20 years	9	40 to 45 years	1
		45 years or over	4

PLACE OF BIRTH AND PARENTAGE

Native born—Native parentage	19
Native born—Foreign or mixed parentage	37
Foreign born	23
	79

PREVIOUS SCHOOL TRAINING

Below 6th grade	3	1st year high school	..
6th grade	9	2nd year high school	4
7th grade	13	3rd year high school	2
8th grade	11	4th year high school	2
8th grade graduates	27	High school graduates	3

OCCUPATIONS

Cabinet Makers	12
Wood Workers	15
Carpenters	7
Machinists	5
Boat Builders	3
Piano Makers	2
Clerks	12
Ship Wrights	2
Shop Teachers	4
15 other occupations	16
	78

CABINET MAKING CLASSES—Continued

NUMBER OF YEARS WORKED AT TRADE

1 year	28	6 to 10 years	8
2 years	11	10 to 15 years	3
3 years	10	15 to 20 years	2
4 years	10	20 to 25 years	1
5 years	4		

WEEKLY WAGES

$5.00 to $7.50	4	$17.50 to $20	6
7.50 to 10.00	17	20.00 to 22.50	
10.00 to 12.50	7	22.50 to 25.00	
12.50 to 15.00	11	25.00 to 27.50	
15.00 to 17.50	3		

LENGTH OF ATTENDANCE

5 to 10 nights	1	20 to 40 nights	20
10 to 15 nights	8	40 to 50 nights	40
15 to 20 nights	6	50 nights or over	1
20 to 30 nights			

CHARACTER OF SHOP INSTRUCTION

Electrical Work: The members of the survey staff visited twenty-five evening classes in electrical work. Of this number eighteen were classes in electrical wiring and installation, five were classes in the theory of electrical work and two were classes in motor work.

As was pointed out in the description of the work of the evening electrical classes, over 50 percent of the men enrolled in these classes were 19 years of age or under, and practically 50 percent of them had worked one year or less at the trade. Not one class visited was made up entirely of electricians and no attempt was made to put apprentices, helpers and journeymen in separate classes. One class in advanced electrical wiring that was visited was made up of 8 clerks, 1 brush maker, 11 electricians, 2 engineers, 1 electrical operator and 1 waiter. Another class, one in electrical installation, was made up of 1 piano maker, 2 housemen, 1 plumber, 1 clothing maker, 1 mechanic in power house, 1 carpenter, 3 clerks, 1 wireman, 1 elevator operator, 4 electricians, 2 organ builders, 1 stationary engineer, 1 shop worker.

The work in electric wiring and installation consisted largely of working out simple problems in bell and light wiring. The instructors usually had a definite set of problems that the

pupils followed and they also gave lectures on materials, the theory of electrical problems, and the Board of Underwriters' requirements. The work was largely individual in character, due to the fact that the previous experience of the pupil was so varied. Several of the classes could not be considered trade extension classes.

The classes in electrical theory were made up of men from several occupations. One class visited registered 11 electricians, 3 electrical machinists, 1 clerk, 1 steam fitter, one salesman, 1 driver, 1 auditor, 1 leather worker and 1 engineer. The courses were general in character and not planned to meet the practical need of special groups of trade workers.

The instruction in electrical shop work was the farthest removed from real trade extension of any of the shop instruction noted in the evening trade schools. This was due to the fact that it is impossible to do much construction work in a school laboratory or shop as well as to the fact the classes were poorly organized and that a large percent of the pupils enrolled in the classes had worked a year or less at the trade.

Plumbing: Ninety-seven per cent of the men in attendance in the twelve plumbing classes visited were working at the plumbing trade during the day. Nearly all of these men attended the evening classes to learn how to wipe joints. The instruction was individual and an attempt was made to give each man the kind of work he wanted.

All the instructors gave lectures on the theory of plumbing, building code requirements and materials. In two classes it was noted that the instructors were teaching the pupils how to read blue prints. One instructor had worked out forty lesson sheets which were given to the men to study at home.

Machine Shop Practice and Theory: Twenty-one classes in machine shop practice and theory were visited by members of the survey staff. Four of these classes were in the theory of machine shop work and seventeen in machine shop practice. Approximately ninety percent of the men enrolled in these classes were working at machine or allied trades during the day.

All the instruction in machine shop practice was individual in character and planned to meet the individual needs of the pupils. This was necessarily modified where the equipment was

SHEET METAL DEPARTMENT—HARLEM EVENING TRADE SCHOOL

limited. Large numbers of pupils desired instruction in milling machine work, but the limited equipment prevented the schools from accommodating all of the applicants. In nearly all the classes visited the men were working from blue prints or free-hand sketches and usually worked out the mathematics connected with their problems. In one school the pupils were building a lathe, in the other schools the work consisted largely of exercises.

Many men were interviewed as to the value of the evening school work and nearly every man stated that the work was very helpful. The only men who were not satisfied were those in the elementary machine shop who were waiting for an opportunity to get into the advanced machine shop.

The courses in the theory of machine shop work consisted of lectures on machines, materials, shop methods and processes, and allied subjects. The men were also given some work in related mathematics and in blue print reading. The instructors were spending part of their time taking up the individual problems of the men and using them for class problems. The courses were well planned and the men took an active interest in the work. There were no machines or materials available in these classes for demonstration purposes.

Carpentry and Joinery: There were 90 men in attendance in the seven classes in carpentry and joinery at the time of the survey. Of the number that gave information concerning their occupation there were 36 carpenters, 3 cabinet makers, 2 ship carpenters, 3 piano makers and 28 men engaged in 18 other occupations. In three classes visited a few pupils were working on problems at stair building and framing; the other pupils were working on cabinet work or making pieces of furniture. In the four other classes visited the work consisted largely of making furniture to be taken home.

Mechanical Drawing: The twenty classes in mechanical drawing in the evening trade schools were visited by members of the survey staff. As pointed out in another part of this report, over fifty percent of the 464 pupils in attendance in the mechanical drawing classes, at the time of the survey, were under 19 years of age, and over half of the pupils were working the first year at their trade.

Very little attempt seems to have been made to group the men of one trade together. In one school with three Monday and Wednesday night classes in mechanical drawing, there were twenty-nine machinists registered in one class, seven machinists in another and nine in the third class. There were twenty-seven other students, representing fourteen other occupations in these three classes. In another school with three classes in mechanical drawing on Tuesday and Thursday nights there were thirty-six machinists in attendance in the three classes. Eighteen machinists were in one class, fourteen were in another and four in the third section. Twenty-three students representing twelve other occupations were in attendance in these classes. In still another school one instructor was teaching a class made up of 20 machinists, 5 clerks, 2 auto mechanics, 2 draftsmen, 1 laborer, 1 pattern maker, 1 jeweler and 1 sheet metal worker.

The smallest number of occupations represented in any one class in mechanical drawing at the time of the survey was five, the largest ten. The organization of these classes made it difficult for the instructors to plan the work to meet the needs of all the pupils. The work in mechanical drawing was so varied in content and method that it is difficult to describe. In some classes the pupils were making free-hand sketches from models and developing mechanical drawings from the sketches; in other classes the pupils were copying drawings from blue prints and books, and in still other classes the boys were working from blackboard sketches.

Industrial Science: The classes in chemistry, physics and mathematics, including such as are called industrial chemistry, applied physics and shop mathematics or trade mathematics, are all called industrial science. Classes in these subjects are organized in the Stuyvesant, Brooklyn and Bushwick Evening Trade Schools. The problems confronting the teacher of any of these subjects in an evening school are so many and so difficult that it is small wonder that the work is unsatisfactory to the teacher, the pupil, the principal of the school or the chance visitor.

A physics class visited had 49 pupils present on the night the work was inspected, one-third of whom were less than 16 years of age. Fourteen of the class stated that they were clerks, eight were machinists' apprentices, or helpers, eight were electricians' helpers and apprentices and the remaining 19 represented eight different occupations. The instructor was using a regular high

CLASS IN TRADE EMBROIDERY—NEW YORK EVENING HIGH SCHOOL FOR WOMEN

school text book in physics and was drilling the class in the meaning of amperes, volts and ohms. Half of the class attended less than 15 nights.

A chemistry class that had ten on register, out of a total enrollment of 37 pupils, had two machinists, two dye workers, two clerks, a newsdealer, a house man, a clothing salesman and a pencil maker remaining in the class. The pupils were doing individual work.

As a whole the teachers in trade mathematics were more successful in attacking the problems than were the other teachers of industrial science. Most of them had sets of problems ranging from very simple to quite difficult, a set for each of the trades represented in the class and each pupil who was a trade worker was provided with problems related to his occupation. The great difficulty there as in all the classes in industrial science was the large number of pupils in the class who were going to be trade workers and who should have been in an arithmetic class in an evening elementary school.

BUILDING AND EQUIPMENT

Harlem Evening Trade School: The Harlem Evening Trade School, located in the Boys' Vocational School, uses for the evening trade classes the equipment provided for the day vocational classes. This building and equipment are described in the report of the day vocational schools.

Murray Hill Evening Trade School: This school is located in the Murray Hill Vocational School. As pointed out in the day vocational school report, this building is the poorest used for vocational work in the city of New York. The building and equipment used for day classes in vocational work is described in the day school report. Besides the equipment used by the day classes, the principal of this school has been able to secure from manufacturers, employers' association and unions the equipment necessary to offer courses in baking, player piano mechanics, motion picture mechanics, offset press work and lithography. The equipment loaned and donated to this school by the manufacturers, employers' associations and unions is valued at about $16,000. The equipment provided by the Board of Education is valued at approximately $4,000. The building is so poor that it

was necessary to place the most expensive machine in the school, an offset press worth several thousand dollars, in a corner of a low, poorly lighted and poorly ventilated basement room. This one machine is worth more than the entire equipment provided by the Board of Education for both the day and evening vocational work in this school. In most of the evening trade schools, some trade classes have been organized without adequate equipment to carry on the work. This is illustrated in the organization of a class in commercial photography in this school. The instructor paid for the advertisements in the "Want Column" of a daily newspaper; purchased the necessary material for a dark room; provided the camera, plate holders and chemicals. Nearly forty photographers registered for this course, but the equipment was so meagre that many gave up the work after a few evenings.

The co-operation of the employers and employees in providing equipment for this evening school is due largely to the efforts of the principal, who has been able, in spite of the physical handicaps, to develop one of the largest and most successful evening trade schools in the City of New York.

Long Island City High and Trade School: This evening school is located in Bryant High School. The day school equipment for machine shop work, woodworking and drafting is used for the trade extension work. Two additional shops have been provided in the basement, one for lead work for plumbers and the other for a class in automobile repairing.

Stuyvesant Evening Trade School: The equipment used for both day and evening courses, such as machine shop work, forging, pattern making, carpentry and joinery, is ample, but the equipment provided for evening courses that are not offered in the day school is not sufficient to do work of a practical nature. This was particularly true in the elementary classes in electric wiring where the equipment consisted of a few boards that were laid on the tops of the desks or placed against the walls, and bells, batteries, wire and the necessary hand tools. The class in commercial photography had practically no equipment with which to work.

Bushwick Evening Trade School: The regular high school

equipment for the courses in machine shop work, pattern making, forging, woodworking, is used for the evening trade classes in these subjects. Additional shops have been equipped in the basement for classes in electric wiring, plumbing, sheet metal work and automobile mechanics. The equipment for sheet metal work is limited, consisting of a few sets of hand tools. The equipment provided for the work in automobile mechanics was limited to two engines and a few special tools.

Brooklyn Evening Trade School: The regular day school manual training equipment is used in this school for all courses except those in electric wiring and linotype operating. The equipment provided for electrical classes consisted of bells, wire, hand tools and one or two motors.

Tottenville Evening Trade School: The rooms and equipment provided for the courses in plumbing, terra cotta modeling, and gas engine mechanics are located in the basement and are used only for evening trade school work. Most of the equipment has been donated to the school by manufacturers, and is limited in quantity and variety.

Manhattan Evening Trade School: The building and equipment provided for this school is described in the day school report.

Evening School of Industrial Arts: The work of the Evening School of Industrial Arts is seriously handicapped by lack of equipment and suitable quarters. The work is carried on in an elementary school building and most of the classes are conducted in the regular class room. A special room has been fitted up for the class in jewelry design, and a play room in the attic is used for the class in mural decoration. One class in costume design was conducted in the domestic science room. It is difficult for adults to sit at elementary desks and do satisfactory work in design.

DISTRIBUTION OF STUDENTS BY SUBJECTS

The following chart shows the number of classes, the total register and the number of pupils on register March 28, 1917,

in the nine evening trade schools distributed by trade groups and trades:

CHART 11.

	Number Classes	Total Register to March 28, 1917.	Number on Register March 28, 1917.
Drawing and Design:			
Architectural Drawing	7	246	137
Blue Print Reading	1	121	29
Commercial Design	1	41	20
Free-hand Drawing	2	74	37
Garment Design	4	235	125
Industrial Design	1	34	25
Ladies Garment Design	6	325	133
Mechanical Drawing	20	1070	472
Plan Reading	7	263	142
Ship Drafting	1	31	21
Structural Steel Drafting	1	41	18
Terra Cotta Design	1	27	22
Trade Drafting	2	64	49
	54	2572	1230
Dressmaking and Millinery:			
Dressmaking	3	96	74
Millinery	1	28	25
	4	124	99
Electrical Work:			
Applied Electricity	5	171	71
Electrical Engineering	2	65	31
	7	236	102
Electrical Wiring and Installation	25	1000	570
Municipal Electric Theory	2	50	31
	34	1286	703
Gas Engine:			
Gas Engine Mechanics and Auto Repair	14	686	382

Special Trades:	Number Classes	Total Register to March 28, 1917	Number on Register March 28, 1917
Industrial Science:			
Chemistry	6	193	101
Physics	3	175	75
Shop Arithmetic	2	74	29
Trade Mathmatics	1	51	25
	12	493	230
Lithography:			
Offset Press Work	2	60	36
Litho-Photography	2	55	41
Litho-Transfer	1	22	13
	5	137	90
Metal Trades:			
Machine Shop	21	986	567
Blacksmithing—Forging			
Tool Making	6	263	127
Sheet Metal	4	153	86
	31	1402	780
Plumbing:	15	614	302
Printing Trades:			
Kelly Press Operating	2	76	38
Linotype Operating	4	122	87
Monotype Operating	2	42	31
Printing	8	369	180
Proofreading	3	83	55
	19	692	391
Baking	2	42	27
Commercial Photography	3	84	44
Interior Decoration	1	21	12
Motion Picture Mechanics	2	62	32
Player Piano Mechanics	1	35	15
Sign Painting	2	52	23
Steam Engineering	2	80	20
Surveying	1	24	13
Terra Cotta Modeling	1	20	20
Wireless	1	17	17
	16	437	223

Special Trades:	Number Classes	Total Register to March 28, 1917	Number on Register March 28, 1917
Woodworking Trades:			
Cabinet Making	5	163	98
Carpentry and Joinery	8	221	150
Pattern Making	3	117	64
	16	501	312
Evening School of Industrial Arts:			
Book Illustration	4	142	72
Costume Design	4	187	115
Jewelry Design	1	23	11
Mural Decoration	2	72	44
Plastic Design	1	22	16
Postèr Design	1	89	22
Stained Glass Design	1	14	8
Textile Design	1	22	13
	15	571	301
(1) *Manhattan Evening Trade School for Girls:*			
Drafting and Pattern Cutting.	2	150	45
Waist Draping	2	92	47
Garment Operating	4	348	90
Straw Machine Operating	2	91	39
Embroidery Operating	2	79	36
Lamp Shades and Novelty Work	1	27	20
	13	787	277

(1) Short courses ranging from 5 to 30 nights.

SUMMARY:

1. The evening trade classes represent the largest field of industrial education in New York City, both in numbers enrolled and in variety of trades represented.
2. The supervision of the evening trade classes is left almost entirely in the hands of the principals of the schools. This lack of centralized control is shown in the content of the courses of study; the different kinds of instruction offered in classes having the same titles; the requirements for admission of pupils to trade classes; and the teaching methods employed.
3. Very little attempt has been made to secure the co-operation of employers' associations and unions in developing the evening trade classes. Such co-operation as has been secured has been the work of individual principals and

has been of little value in developing the evening trade classes as a whole.

4. Very few classes have been organized to meet the needs of special groups of workers. Not one class made up entirely of apprentices was found in the evening trade classes. In many classes men representing five or six trades were found in the same class.
5. The principal, and in many cases the individual teacher, advertises the evening trade classes. No broad, comprehensive campaign has been developed for advertising the evening trade classes.

REPORT OF ADVISORY COMMITTEE OF EVENING TRADE SCHOOLS

Resting upon the findings of fact developed by the present survey, the committee feel that evening trade schools consisting of trade extension classes whose members are employed during the day in occupations to which the instruction offered is strictly related, represent the most important need for industrial education presented in the city and that provision for such schools should be made on a corresponding scale.

The survey shows that evening classes are needed for the following reasons:

(a) In order to provide opportunity for better all-round training for the worker. Such opportunity is lacking in the proper training of apprentices in most manufacturing establishments where the work is usually of a more or less highly specialized character.

(b) The rank and file of industrial workers leave school at so early an age that development of initiative and ability is apt to be very slow, if not lost entirely. The evening trade extension class offers opportunity to the individual to find himself.

(c) The demand is so great at the present for skilled workmen, gang bosses and foremen, that it is extremely essential that properly organized trade extension classes give the opportunity and help to men in the trades in preparing themselves for the better positions or places in industry which are waiting for them.

(d) Industries are changing in character and it is frequently necessary for the worker to obtain instruction along other than his accustomed lines of work in order that he may keep abreast with modern industrial development, methods and processes. Trade extension classes operating on the unit course plan may be of invaluable aid to such men.

Inasmuch as the state law requires that pupils in evening trade or homemaking classes, receiving state aid shall be 16 years

of age or over, and inasmuch as employers, as a rule, will not accept boys under 16 as apprentices, the committee are of the opinion that 16 years should be, as at present, the minimum age of pupils admitted to evening trade extension classes.

A study of the survey report shows that large numbers of pupils are admitted to evening trade extension classes who are not employed in industrial or trade pursuits during the day. The committee recommends that applicants for admission to trade extension classes should not be accepted as members of the class unless employed during the day in an occupation recognized as a part of the trade in which instruction is offered.

The survey shows that one of the serious weaknesses in carrying forward evening trade classes is the large falling off in attendance mainly brought about by the tendency of many persons to register and drop out after a few nights in the class. In order to insure seriousness of purpose in those registering for these classes, the committee recommends that a nominal deposit be required in each course of all pupils registering in evening trade extension classes, this deposit to be returned to those students maintaining an average attendance of at least 75 per cent. of their class sessions. This fee should be large enough to cover the cost of any texts, materials, and supplies lent the pupil in order that he may feel the responsibility of the return to the school, when it is necessary for him to do so, of all such material in satisfactory condition.

In regard to organization, the committee recommend that all evening trade schools should be under the final authority of the person having in charge the direction of all-day vocational or trade schools. Many of the problems of the evening trade schools are similar to those of the all-day schools giving intensive instruction in trade work:

Men of practical experience teaching in the day schools are available for work in evening schools.

Investigations or surveys should be made to determine the need of certain kinds or phases of trade instruction by the head of the entire system.

The equipment in said schools should be made available for evening trade school purposes.

The organization of classes, in the judgment of the committee, should follow the present plan which offers two nights per week

for a definite number of weeks in any course of instruction in any specific trade subject, but not exceeding thirty weeks a year for any special unit. Students, however, with the consent of the director of industrial education, should be given the opportunity to attend a second class in a related trade subject.

In regard to the size of classes, the committee are of the opinion that shop classes should not exceed 16 and that classes in trade drawing, shop mathematics and trade science should not exceed 20 to 24. Men and boys in trade classes differ extremely as far as ability, trade experience and previous school training are concerned. Instruction of necessity must be largely individual. With the class in session barely two hours, the teacher can spend less than ten minutes with the individual if the number exceeds twelve in the class. To those having experience in evening classes it is obvious that the personal contact between teacher and pupil give the most satisfactory result. When students are enrolled it is highly desirable that teachers should register students for their own classes. The personal interview, which cannot be satisfactorily accomplished by the principal alone, helps very much in ascertaining the needs of the applicant and in placing or classifying him with the group where he belongs.

This committee heartily endorses the recommendations of the committees appointed by the Allied Printing Trades Council and the Association of Employing Printers, for the establishment of a central school of printing and also the adoption of the courses of study suggested by these committees for evening trade extension classes in printing.

This committee also has the firm conviction that it is advisable to bring together in one school wherever practicable all evening classes in the same field of work in order that through this larger grouping, students may be more readily and carefully graded as to their previous training, experience and ability. This plan will tend to improve the character of instruction and make possible much better and more far reaching results than are at present obtainable. This arrangement also makes possible a larger and more satisfactory equipment than can be had under the present plan of widely distributed classes in the same subjects.

The committee are of the opinion that a judiciously planned system of advertising will enable the evening trade classes to more

effectively reach the workers most prepared to benefit through such instruction. All advertising of evening trade extension classes should be controlled by a central source of publicity which should always in its advertising emphasize courses offered and opportunties available for the worker, rather than to accelerate the numbers in attendance therein. General publicity may be given through newspaper and bulletin board advertising but a special appeal stating opportunities offered to workers in each trade, should be made by means of circulars advertising courses of interest to each group. These circulars to be distributed to labor unions, employers and other interested parties. Lantern slides showing school activities can be shown in moving picture houses together with announcements of opportunities offered. Display advertisements in the "Want" columns of newspapers are very effective in calling attention to the school.

A study of the survey report indicates very clearly the lack of adequate supervision of these classes. The immense amount of routine clerical reports and work connected with them gives the principal of the school little opportunity to supervise properly the classes in his charge. The committee recommends that sufficient clerical help be provided to take care of all routine work and records in order that the principals may devote practically their whole time to visiting classes in their charge and that the teachers may devote their whole time to instruction.

The survey indicates the need of special supervisors for the work of many classes. For instance, there are 1,286 students enrolled in 34 classes in electrical work. No attempt has been made to standardize or even outline logical and systematic courses of instruction for all of these classes. This is practically true of all the other courses in the trade classes. This committee wishes to emphasize this lack of proper supervision and recommends that special supervisors be appointed to look after all classes in the special subjects under consideration by the survey committee. The duties of these supervisors may be outlined somewhat as follows:

(a) To determine from consultation with employers and employees the special needs that the instruction offered shall meet.

(b) To meet with and instruct teachers as to the needs of pupils, methods of teaching and assist in the working out of details of courses.

(c) To supervise carefully and check up the work of individual teachers.

(d) To make recommendations as to needed equipment and supplies.

(e) To determine the type of pupils who may enter various trade classes.

(f) To arouse interest in evening school work among labor unions and employers associations.

(g) To standardize courses of instruction and assist the board of examiners in the selection of teachers for classes under this supervision.

The committee recommends that a careful study be made of the various reports of the survey committee and from the information there given concerning the details of the different occupations investigated, courses of instruction be carefully outlined by a group of people thoroughly conversant with the needs of the workers and also competent to intelligently plan such courses. Such courses once thoroughly worked out can be readily followed by properly selected teachers, who, with the assistance of competent supervisors, can keep these courses of instruction in line, and abreast of, the demands of modern industry.

In regard to the short unit course referred to in the findings, the committee feel that it is very important that certain fundamental facts should be recognized:

(1) The short unit course of instruction in evening schools has its special value for adult workers who have not the habit or inclination to attend school courses of any length and who would be drawn to the evening school only to obtain assistance for some direct and particular need which arises in their immediate practical experience.

(2) For the young men between 16 and 21 years of age who attend evening courses, it is far better in the judgment of the committee to offer courses of a year, two years and even three years in length composed of matter that relates directly to trade needs and in which the instruction is differentiated to the fullest degree. It would be a great mistake in the judgment of the committee to emphasize solely to these young men in the developing period of life, and whose exact place in their industrial future is not yet defined, the idea of the short unit course, and place the educational emphasis only upon a brief fractional part of a single subject of instruction.

Signed
FRANK E. MATHEWSON,
C. R. DOOLEY,
O. B. FURNEY.

THE CO-OPERATIVE CLASSES IN THE NEW YORK CITY HIGH SCHOOLS.

The history of the movement for the establishment of co-operative classes in New York City is practically the same as that which resulted in the establishment of the continuation classes. The classes were started under the direct supervision of the late Dr. J. H. Haaren, associate superintendent of schools, with Dean Herman Schneider, of the University of Cincinnati, acting in an advisory capacity. The necessary authorization for the work was passed by the Board of Education September 16, 1914.

The following definition of the "Co-operative System" is taken from Dean Schneider's report (1911) to the Committee on School Inquiry of the Board of Estimate and Apportionment:

The Co-operative System: "The co-operative system is based on an agreement between a group of manufacturers and a school system whereby the manufacturers agreed to institute and carry on a thorough and comprehensive apprentice course in their particular trades; and in which the school agrees to give both general and specialized instruction to the apprentices. The course of work which the student receives in the shop is scheduled by the shop and must be approved by the school authorities. In most cases the amount of school instruction is equal to the amount of shop work. The apprentices are usually divided in two sections, that alternate with each other, for example, by weeks, so that when one section is at the shop and the other is at the school, both the shop and school, therefore, are always fully manned. The apprentices are paid for their work in the shop on the regular apprenticeship scale of their own particular trade.

The Co-ordinator: "In order that the work of the school may be definitely co-ordinated with the work of the shop, a separate set of teachers is sometimes employed. These may be called co-ordinators. A shop co-ordinator is a teacher well versed in shop practice. His function is to make a direct co-ordination of the work of the shop with the instruction of the schools."

The Co-operation of the High School Principals: The President of the Board of Education sent to the high school principals of the city a letter describing the proposed plan of co-opera-

tion between the schools and the employers, and, at a meeting of the principals, Dr. Schneider outlined the plan of co-operative work. Each of the principals who expressed an interest was visited by the associate superintendent in charge of the co-operating work and if he expressed a readiness to try the experiment in his school he was asked to name a member of his corps of teachers to act as co-ordinator.

Before the plan could be started it was necessary to secure the co-operation of the parents. This was done in many ways. Public meetings were held where the superintendent in charge of this work, the principal of the school, or the co-ordinator explained the plan to the parents who were present. The following statements are extracts taken from circulars describing the co-operative plan which were sent to parents:

"Co-operation is established only with such business houses as provide thorough training under favorable conditions in occupations leading to a competence, self-respect and development. In short, this plan means not getting a job but starting on a career.

"Full school credit will probably be given for the work done in the shop, store and office, so that the student under the co-operative plan may complete his course in the usual time.

"All boys and girls over the age of sixteen who have successfully passed in at least one year's work in any of the established high school courses and who obtain the consent of their parents, or guardians, to take this course, are eligible."

The Co-operation of Employers: In other cities where the co-operative plan has been introduced it has been at the request of the employers either as individuals or through their associations. Here the employers needed to be educated to appreciate the value of the plan to them as well as to the students. Much of this work had to be done by the co-ordinators who made individual visits to offices of many firms in an endeavor to interest them in the plan. The following statements are extracts taken from circulars, describing the co-operative plan sent to employing firms. They are presented here because they furnish a standard by which the work of the classes can be judged:

"The work of the students in the industry follows a predetermined sequence (the office as shop syllabus) in order that the students may become familiar with the relations of the various processes to each other, as well as with the processes themselves.

"The work in the school is related to the work in the industry by the co-ordinators (employed by the Board of Education) who study the pupils and their work for the purposes of: (a) Discovering defects in the work and habits of students that may be corrected in school; (b) Finding how the school work may supplement the industrial work."

Beginning the Work: As soon as schools, pupils, parents and employers began to be interested in the co-operative plan and expressed a willingness to undertake it, the work was started. Five schools (Curtis, Bushwick, Manual Training, Newtown, and Julia Richman) began work February 1, 1915. The Bryant started a week later. Stuyvesant began the work on February 22, the Commercial on March 8, and the Washington Irving on March 22. The Erasmus Hall School started on May 10. The table below gives the number of pairs of workers and the number of co-operating firms on the opening date for each school:

TABLE SHOWING SCHOOLS, DATE OF ORGANIZATION OF WORK, NUMBER OF PUPILS, AND FIRMS CO-OPERATING.

School	Date Beginning	Pairs Co-operating Pupils	Firms Co-operating
Curtis	Feb. 1, 1915	6	3
Bushwick Com.	Feb. 1, 1915	5	1
Bushwick Tech.	Feb. 1, 1915	8	3
Manual Training	Feb. 1, 1915	10	3
Newtown	Feb. 1, 1915	12	3
Julia Richman	Feb. 1, 1915	1	1
Bryant	Feb. 8, 1915	1	1
Stuyvesant	Feb. 22, 1915	4	1
Commercial	Mar. 8, 1915	1	1
Washington Irving	Mar. 22, 1915	7	2
Erasmus Hall	May 10, 1915	2	2

During the half year, from February 1, 1915, to July 31, 1915, there were 63 different firms that co-operated in this work, employing a total of 103 boys in 19 different occupations and 65 girls in six occupations. Of the 103 boys, 42 were employed in machine shop work and 22 in clerical work; the remaining 39 were distributed in 17 different occupations. Of the girls, 31 were engaged in clerical work, 15 in salesmanship, 15 in dressmaking, two in art work and two in corset making.

Development of the Co-operative Classes: The report for the week ending January 20, 1917, showed that the eleven high schools engaged in the co-operative work had 386 pupils in these classes and had been able to secure the co-operation of 90 firms. The distribution of these pupils by schools, the number of firms and the nature of the occupation of the pupils is shown in the table below:

School	Number of Pupils		Number of Firms	Nature of Work.
	Boys	Girls		
Bushwick — Industrial.....	37	..	12	Industrial
Bushwick — Commercial....	..	105	15	Clerical
Bryant	9	..	4	Industrial
Commercial	67	..	6	Clerical
Curtis	7	..	4	Industrial
Julia Richman.....	..	8	3	Clerical
Morris	3	27	5	Clerical and Salesmanship
Manual Training.....	42	..	12	Industrial
Stuyvesant	8	..	7	Industrial
Newtown.....	21	28	15	Clerical and Salesmanship
Washington Irving.....	..	24	7	Industrial
	194	192	90	

Re-organization of Co-operative Work: In February, 1917, four weeks before this survey of the co-operative classes was started, the Committee on Industrial Schools and Vocational Activities of the Board of Education, secured the services of Dean Schneider for a week's time, to advise with those in charge of the co-operative classes concerning the re-organization of the work. The purpose of this re-organization was to take advantage of the experience gained in the two years that the co-operative classes had been in operation to reduce the expense and make the work more efficient by centralizing various types of classes in certain schools adapted by location and equipment for that work. As a result the classes were distributed as follows:

Manual Training High School—industrial work for boys,
Washington Irving High School—industrial work for girls,
Bushwick High School—commercial work for girls,
Commercial High School—commercial work for boys,
Morris High School—commercial work for boys and girls,

Newtown High School—commercial and mercantile work for boys and girls,
Julia Richman High School—commercial work for girls.

The direction of the co-operative classes was placed in the hands of the associate superintendent in charge of vocational activities who was already in charge of the prevocational schools, the day vocational schools and the part-time industrial and continuation classes.

Distribution of Pupils in Co-operative Work: For the week ending March 24, 1917, in the seven high schools, 474 different pupils were engaged in co-operative work for 122 firms. In order that the reader may see the nature and difficulty of the problem with which the co-ordinators were contending, tables are given for each school which show the names of the firms co-operating, the number of students, the nature of the work the pupil worker does, and the aggregate weekly wages earned.

STATEMENT SHOWING HIGH SCHOOLS HAVING CO-OPERATIVE COURSES, NUMBERS ENROLLED, THE NAMES OF FIRMS CO-OPERATING, THE NATURE OF THE WORK AND AGGREGATE WEEKLY EARNINGS—WEEK ENDING MARCH 24, 1917

BUSHWICK HIGH SCHOOL

Name of Firm	Number of Students Boys	Girls	Total	Nature of Work
American Book Company	..	6	6	Office Work
Bell Tailors	..	4	4	Office Work
Flemish Linn Phonograph Co	..	2	2	Steno. & Type.
Independent Magazine	..	..	..	Office Work
H. H. Ingersoll & Bro	..	22	22	Office Work
Liggitts	..	2	2	Clerical
Merchants' Association	..	2	2	Steno. & Type.
Montgomery, Ward & Co	..	33	33	Clerical
Oppenheim & Collins Co	..	4	4	Clerical
Portland Consolidated Copper Co	..	1	1	Steno. & Type.
Remington Typewriter Co	..	4	4	Clerical
Review of Reviews	..	17	17	Clerical
Triangle Electric Trading Co	..	1	1	Steno. & Type.
Western Union Telegraph Co	..	1	1	Clerical
	..	100	100	

Aggregate weekly earnings for half of the pupils—$279.29.

COMMERCIAL HIGH SCHOOL

Name of Firm	Number of Students Boys	Girls	Total	Nature of Work
Broome & Newman	1	..	1	Clerical
Corn Products Refining Co	2	..	2	Clerical
Frugons-Balleto & Bellegatti	1	..	1	Collecting Accts.
Johnson & Higgins	2	..	2	Office Work
Remington Typewriter Co	18	..	18	Clerical
William R. Grace & Co	13	..	13	Clerical
Federal Reserve Bank	5	..	5	Mercantile
Public Bank of New York	2	..	2	Banking
The Texas Company	4	..	4	Banking
	8	..	8	Office Work
	56	..	56	

Aggregate weekly earnings for half of the pupils—$241.89.

JULIA RICHMAN HIGH SCHOOL

Name of Firm	Number of Students Boys	Girls	Total	Nature of Work
Colliers	..	2	2	Clerical
Funk & Wagnalls	..	8	8	Clerical
Lord & Taylor	..	8	8	Clerical
R. H. Macy & Co	..	4	4	Office Work
Western Union Telegraph Co	..	1	1	Clerical
	..	23	23	

Average aggregate weekly earnings for half of the pupils—$61.00.

MORRIS HIGH SCHOOL

Name of Firm	Number of Students Boys	Girls	Total	Nature of Work
B. Altman & Co	..	1	1	Clerical
Lord & Taylor	..	8	8	Salesmanship
R. H. Macy & Co	..	16	16	Cler. & Sales.
R. H. Macy & Co	2	..	2	Mercantile
McClure's Magazine	..	2	2	Clerical
Peierls, Buhler Co	2	..	2	Clerical
	4	27	31	

Aggregate weekly earnings for half of the pupils—$71.50.

MANUAL TRAINING HIGH SCHOOL.

Name of Firm	Number of Students Boys	Girls	Total	Nature of Work
American Ever Ready Co.	2	..	2	Drafting
B. Altman & Co.	2	..	2	Power Plant
American International Co.	4	..	4	Clerical
Amer. Machine & Foundry Co.	5	..	5	Machine Shop
Beckers Aniline & Chem. Works.	4	..	4	Chemical Work
E. W. Bliss & Co.	1	..	1	Machine Shop
Brady-Murray Motor Corp.	2	..	2	Auto Repairs
Doehler Die Casting Co.	4	..	4	Die Casting
Electric Bond & Share Co.	2	..	2	Clerical
Robert Gair Co.	7	..	7	Printing
J. B. Hoecker & Co.	1	..	1	Lens Grinding
Intertype Corporation	1	..	1	Machine Shop
Isaac Blanchard Press	3	..	3	Printing
Lehn & Fink	2	..	2	Mercantile
R. H. Macy & Co.	1	..	1	Power Plant
Mergenthaler Linotype Co.	17	..	17	Machine Shop
Metropolitan Engineering Co.	4	..	4	Manufacturing
Richmond Light & R. R. Co.	1	..	1	Power Plant
Richmond Light & R. R. Co.	2	..	2	Power Plant
Sears Cross & Co.	2	..	2	Machine Shop
Western Union Telegraph Co.	10	..	10	Telegraphing
	77	..	77	

Aggregate weekly earnings for half of the pupils—$233.33.

NEWTOWN HIGH SCHOOL

Name of Firm	Number of Students Boys	Girls	Total	Nature of Work
Abraham & Strauss	..	4	4	Clerical
B. Altman & Co.	..	3	3	Clerical
Amoskeag	4	..	4	Office Work
Isaac Blanchard Press	1	..	1	Printing
Boy Scouts of America	5	..	5	Office Work
Cammeyer Shoe Co.	..	1	1	Salesmanship
Ever Ready Co.	4	..	4	Clerical
Funk & Wagnalls	..	3	3	Clerical
Lord & Taylor	..	5	5	Salesmanship
R. H. Macy & Co.	3	14	17	Salesmanship
McClure's	..	4	4	Office Work
New York Times	1	..	1	Office Work
Peierls Buhler Co.	2	2	4	Clerical
Rogers, Peet Co.	1	..	1	Salesmanship
Slater Shoe Co.	2	..	2	Salesmanship
U. S. Silver Fox	..	2	2	Clerical
Western Union Telegraph Co.	1	..	1	Clerical
A. Winfheimer	2	..	2	Clerical
Dommerich	1	..	1	Office Work
	27	38	65	

Aggregate weekly earnings for half of the pupils—$222.85.

WASHINGTON IRVING HIGH SCHOOL

(Co-operating with Industrial Firms)

Name of Firm	Number of Students Boys	Girls	Total	Nature of Work
Miss Smith		4	4	Industrial
Miss Finch		2	2	Industrial
Quality Shop		2	2	Industrial
Mood Co		8	8	Industrial
Moe		4	4	Industrial
B. Gordon		2	2	Industrial
Alperstein & Wittenberg		4	4	Industrial
O'Donovan		4	4	Industrial
Miss S. Finkelstein		2	2	Industrial
Rohn & Rienzi		14	14	Industrial
G. A. Simpson		8	8	Industrial
P. F. McGowen Co		4	4	Industrial
Helen Sheppard		4	4	Industrial
		62	62	

Aggregate weekly earnings for half of the pupils—$174.00.

(Co-operating with City Departments)*

Name of Dept.	Number of Students Boys	Girls	Total	Nature of Work
Dr. Robinson, City College		2	2	Clerical
Secretary, Board of Education		6	6	Clerical
Director of Janitors, Mr. Maguire		2	2	Clerical
Associate Supt. Dr. McAndrew		2	2	Clerical
Associate Supt. Dr. Shallow		2	2	Clerical
Associate Supt. Dr. Ettinger		2	2	Clerical
Bureau of Statistics		2	2	Clerical
District Supt. Dr. Stitt		2	2	Clerical
Mr. Foster		2	2	Clerical
Miss Farrell		2	2	Clerical
Dr. Haney		2	2	Clerical
Mrs. Wilcox		2	2	Clerical
Mr. Jenkins		2	2	Clerical
Physical Training Department		2	2	Clerical
Miss Moscript		2	2	Clerical
Bureau of Attendance		6	6	Clerical
P. S. No. 40, Dr. Van Denburgh		2	2	Clerical
Bureau of Recreation		4	4	Clerical
Mr. Mills		4	4	Clerical
Mr. Dobbins		4	4	Clerical
Employment Dept., Wash. Irv. H. S.		2	2	Clerical
Co-ordinator's Office, Wash. Irv. H. S.		2	2	Clerical
Dr. Byrnes		2	2	Clerical
Pupils worked without pay		60	60	

* Up to February, 1917, no co-operative pupils who were not being paid for the time they spent out of the school were reported. Beginning March 12, it was decided to count the pupils in the commercial department of Washington Irving High School who were working for city departments and received no pay as co-operative students.

SUMMARY FOR THE WEEK

Total aggregate earnings for half of the pupils	$1,283.86
Total number of pupils co-operating	474
Total number of firms co-operating	122
Total number of high schools co-operating	7

Limits of the Survey. This survey was limited to those schools (Manual Training, Morris, Newtown and Washington Irving) that were training pupils for the industries and salesmanship which represented about one-third of the co-operative work organized at the time of the survey. The trades at which the pupils were working and the number of pupils from each of these four high schools who were preparing for each trade is shown in the table on this page. As indicated in the table on page 167, three other high schools (Bushwick, Julia Richman and Commercial) were working under the co-operative plan, but as they were training exclusively for commercial work and not for industrial work or salesmanship, they are not considered in this part of the report.

STATEMENT SHOWING DISTRIBUTION OF PUPILS IN INDUSTRIAL AND SALESMANSHIP CO-OPERATIVE CLASSES BY SCHOOLS AND OCCUPATIONS ON MARCH 24, 1917.

	Manual Training		Morris		Newtown		Wash. Irving	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Automobile Repairing	2	..	..	..	..	..	..	..
Chemical	4	..	..	..	..	..	..	..
Drafting	2	..	..	..	..	..	..	..
Dressmaking	..	..	..	..	..	..	..	62
Die Casting	4	..	..	..	..	..	..	..
Lens Grinding	1	..	..	..	..	..	..	.
Manufacturing	4	..	..	..	..	..	..	..
Machine Shop	26	..	..	..	..	..	..	..
Printing	10	..	..	..	1	..	..	..
Power Plant Operating	6	..	..	..	..	..	..	..
Salesmanship	..	..	..	24	6	20	..	..
Totals	59	..	..	24	7	20	..	62

CO-OPERATIVE INDUSTRIAL COURSE FOR BOYS IN THE MANUAL TRAINING HIGH SCHOOL

Organization: After the re-organization of the co-operative classes in February, 1917, the industrial work for boys was discontinued in the Bushwick, Bryant, and Curtis High Schools and centralized in the Manual Training High School of Brooklyn. At the time of the survey in March, 1917, this school had an enrollment of 3500 boys, 59 of whom were enrolled in the industrial co-operative course. Practically all of the boys in this course were in separate classes for all subjects but because of the limited number of boys registered for any of the trades except machine shop practice, they were not grouped or divided according to trades or occupations. The classes were taught by regular high school teachers, no one of whom spent all of his time in co-operative work.

Character of the Instruction: In almost all classes the instruction was found to be of a general industrial nature with as close correlation to the shop work of the boys as was possible where pupils working at several different trades were in the same class. The one class that was an exception to this was in chemistry which was taught as a pure science with little practical application or correlation with industry. In this particular case the need seemed to be apparent for more authority on the part of the co-ordinator so that he might bring about some adjustment in such cases as this. In English the classics (except "Henry VIII" and "Idylls of the King") had been dropped from the co-operative course. Much emphasis was placed on current events, conversational English, oral expression, spelling, and letter writing. In mathematics certain propositions were chosen that had a practical bearing on trade problems. A thorough drill was given in the use of the slide rule and logarithms. Applications of rules and formulae for belting, speeds and gearing were given in the course. In physics the emphasis was placed on mechanics, power machines, electricity, electrical testing, steam and gas engines. The course in history was made up of industrial history, American history, civics, economics and the biography of inventors.

The shop work was largely of the usual manual training type with only slight modifications to meet the needs of the pupils in the co-operative work. Since pupils studying several different trades were in the same shop class (for instance, pupils in printing were in the forge shop) the school shop work was correlated

with the factory work only in the case of those boys who happened to be employed in the same line of work outside.

Course of Study: The plan of studies for this school is given as an illustration of what has been done to adjust the regular high school course of study to the needs of the boys in the co-operative classes. In some cases students began work under the co-operative plan in the second year, in which case the number of points per term for the school subjects is one-half the number here given and 12 points are given for the work in industry as in the third year.

MANUAL TRAINING HIGH SCHOOL BROOKLYN

Plan of Studies	Industrial Co-operative Course	
First Year:	Hours per Week	Points per Term
English	5	5
Expression	1	1
Algebra	5	5
General Science	5	5
Drawing F. H. Mech. 2	4	2
Shopwork—Materials	7	3½
Music	1	½
Physical Training	2	1
	30	23
Second Year:	Hours per Week	Points per Term
English	3	3
Geometry	5	5
Chemistry	5	5
Industrial History	3	3
Drawing F. H. Mech. 2	4	2
Shopwork and Materials	7	3½
Music	1	½
Physical Training	2	1
	30	23
Third Year:	Hours per Week	Points per Term
English	5	2½
Mathematics	5	2½
Physics	5	2½
Commercial Law or Economics	4	2
Mechanical Drawing	5	1
Shop Work—		
Machine Shop	..	..
Materials	6	1½
	30	12
Time in Industry	48	12
		24 points

MANUAL TRAINING HIGH SCHOOL
Industrial Co-operation Course

Fourth Year:	Hours per Week	Points per Term
English	5	2½
Business Practice and Bookkeeping	4	2
Physics (Electricity)	5	2½
American History and Civics	5	2½
Mechanical Drawing	5	1
Machine Shop	6	1½
	30	12
Time in Industry	48	12
		24 points
Points required for graduation	..	150 points

Records of Pupils: During February and March, 1915, there were 40 boys from this school who started on the co-operative plan of work. In February, 1917, they were distributed as follows:

Still working in the co-operative course	18
Transferred to other schools	3
Transferred to regular manual training course	3
At work	11
In military service	1
Unknown	4
Total	40

There were six boys who graduated from the co-operative course in June, 1917.

Attitude of Employers Toward Co-operative Pupils: The methods of measuring the outside work by the school authorities are chiefly through the reports given on the boys' work by the foremen and superintendents of the shops and the work of the co-ordinator who checks up these reports by personal visits to the boys at work. Each boy also makes a report the first day of his return to school.

All of the employers of the boys who were doing industrial co-operative work stated that they favored the plan of co-operation between the school and the industry, although there was a wide difference in their methods of handling the boys that worked for them. This may be shown by comparing two firms in the same line of business.

The first firm had about 250 employees, of whom 24 were boys,

two of them working on the co-operative plan. This firm desired to have the boys spend from six months to one year running errands for which they would receive $6.00 a week, and then for another year they were to distribute leads and learn the case, receiving $7.00 per week. One difficulty with the scheme was that none of the boys would stay to complete the errand boy period. The foremen stated there had been an aggregation of twelve boys sent to this firm, most of them staying only about three months. One stayed a year spending eight months as errand boy and four months on the monotype. The foreman said that the boys were a nuisance coming in one week and out the next, and, although he admitted that they were of a good grade, he complained that they expected to set type or run a press as soon as they started to work. The boys objected strenuously to the long errand period. With their own apprentices the firm was quite liberal. They sent the boys to the apprentice school, paying the fees and their wages for the time spent there.

The other firm when visited in April, 1917, had seven boys who were doing co-operative work and would have been glad to have had ten more. The firm had started this plan one and a half years before this and had had a total of twenty-two boys from the schools. Of this number, twelve divided their time between the firm and the school; four were with them as full time workers, and six had left, three to enter office work and three to go with other printing establishments. Although the foremen were opposed to the scheme at first, later they favored it heartily. The foreman of the press room said: "They are absolutely the best boys we ever had." He said furthermore that as soon as the apprentices in the shop had finished their apprenticeship the firm would put in co-operating boys exclusively. Plans had also been worked out so that the boys could go into the color department and the lithographing department. The schedule for these boys in the press room was three months as "fly boys" and helpers and nine months as press tenders and assistant feeders at $7.00 per week. After one additional year as feeder a boy could go in as a pressman, working up as opportunity offered to the more skilled and better paid positions.* These employers expressed themselves as perfectly satisfied with the results of the co-operative

*The opportunities for advancement in the press room are shown in detail in the printing report.

scheme and showed a willingness to work more closely with the school authorities and to follow a more definite scheme.

A manufacturing concern which can be taken as a type of those employing boys in machine shop work, started to co-operate with the Manual Training High School in February, 1915. At the time of the survey they had 18 boys co-operating, four of whom had been with them for the two years. The co-ordinator and superintendent had worked out a regular shop schedule for the boys. The factory was divided into nine departments, each pair of boys working for three months in each department which gave each boy six weeks of actual shop work in each. These departments were: (1) Engineering and shop repair; (2) Brass foundry; (3) Tool room and machine repair; (4) Brass working; (5) Pattern making, both wood and metal; (6) Nickel plating; (7) Blacksmithing; (8) Light manufacturing; (9) Tool making The co-ordinator was given entire power to change the boys to other departments. The wages paid were $5.00 per week at the beginning, after which they were paid what the foreman thought they were worth. This firm had 40 apprentices in the tool room. Their schedule of pay was the same as the co-operative boys. The assistant superintendent of the factory kept an exact record of the progress of the co-operative boys, being much interested in this experiment. All the boys interviewed stated positively that they would not have been in school at this time if it had not been for the co-operative plan. All expressed themselves as being pleased with the opportunity of going to school and at the same time doing practical work and earning money.

At the beginning of the experiment the superintendent and foreman were very much in favor of the plan, but at the time of the survey the foreman was not so strongly in favor of it. They felt that the boys did not stay long enough in one department, each boy being in one department only six weeks of actual working time.

It is impossible to give a detailed account of all the factories co-operating, but it can readily be seen from the above instances that every firm presented its own peculiar problems.

At the time of the reorganization of the co-operative work in February the pupils from the Bushwick and Bryant High Schools who were co-operating with industrial firms were transferred to the Manual Training High School and combined with the co-operative classes there. The table on the page following shows the

firms that were co-operating with each school on January 20th before the consolidation of the two groups, with the number of pupils each firm employed and shows the results of the consolidation as far as the number of pupils and number of firms are concerned. The table also shows that practically all of the firms that were co-operating with the Manual Training High School in industrial work in February, 1917, were also co-operating in June and employing about the same number of boys. This is in marked contrast with the firms that were co-operating with the schools in dressmaking and in salesmanship:

TABLE SHOWING **RESULT OF THE CONSOLIDATION OF THE BUSHWICK CO-OPERATIVE CLASSES WITH THOSE OF THE MANUAL TRAINING HIGH SCHOOL.**

Nature of Work		Bushwick Industrial, Jan. 20, 1917	Man. Tr. Industrial, Jan. 20, 1917	Manual Training High School After the Consolidation — Feb. 10, 1917	Mar. 19, 1917	Apr. 7, 1917	May 5, 1917	June 2, 1917
Mergenthaler Linotype Co.	Machine Shop	6	10	14	18	17	17	17
E. W. Bliss & Co.	Machine Shop	1	..	1	1	1	1	1
American Machine & Foundry Co.	Machine Shop	1	5	6	6	6	5	6
American International Co.	Machine Shop	2	..	2	4	3	3	3
B. Altman & Co.	Power Plant	2	..	2	2	2	2	2
Western Union Tel. Co.	Telegraphing	9	4	9	11	11	11	11
Lehn & Fink	Office Work	2	2	2	2	4	4	4
Sears, Cross & Co.	Machine Shop	2	..	2	2	1	1	1
Intertype Corporation	Machine Shop	2	..	2	2	1	1	1
Blanchard Press	Printing	3	..	3	3	2	2	2
Beckers Aniline & Chemical Works	Chemical Work	6	2	5	4	4	3	3
R. H. Macy & Co.	Power Plant	1	1	2	2	1	1	1
J. B. Hoecker & Co.	Lens Grinding	..	2	2	1	1	..	..
Robert Gair Co.	Lithography	..	9	9	7	7	7	7
Doehler Die Casting Co.	Die Casting	..	3	4	4	4	4	3
Metropolitan Engineering Co.	Manufacturing	..	2	2	4	4	4	4
R. H. Coney	Office Work	..	1	1	..	..	..	..
Richmond Light & R. R. Co.		..	1	1	1	1	2	2
American Ever Ready Co.	Drafting	..	..	..	2	2	2	1
Brady Murray Motor Corporation	Auto Repairs	..	..	..	2	2	..	..
Electric Bond & Share Co.	Clerical	..	..	..	2	3	4	4
W. Haedrick	Printing	..	..	..	..	1	1	1
Total number of pupils		37	42	69	80	78	75	74

CO-OPERATIVE INDUSTRIAL COURSE FOR GIRLS IN THE WASHINGTON IRVING HIGH SCHOOL.

Organizations: The organization of the school work for the co-operative girls has been in some respects less difficult than the organization of similar courses for boys. While the boys in co-operative courses in the Manual Training High School were engaged in many different occupations with only a small number of boys in any one occupation, practically all of the girls in the co-operative classes in the Washington Irving High School were employed in the one occupation of dressmaking, a trade for which the girls had had special preparation in school. This rendered it unnecessary to have a special teacher, or teachers, for the girls who were co-operating, although to a large extent the girls in this course were in separate classes. There were seventeen of these special classes and four classes where pupils in this course had been put with pupils doing regular work.

At the time of the re-organization of the co-operative classes in February, the Washington Irving School had 24 girls co-operating with seven firms. Four of these girls were employed in the manufacture of lamp shades and the others were engaged in dressmaking establishments.

The following table shows how difficult is the organization of co-operative classes in such a seasonal trade as dressmaking and how much of the time of the co-ordinator was spent in securing firms with whom to co-operate. It will be noted that three firms employed pupil-workers continuously from February 24, 1917, to June 2, 1917, each firm having a single pair of girls. Six firms furnished employment continuously from March 24 to June 2, employing eleven pairs of girls. Twenty pairs of girls were employed continuously for a month or less by the firm with which they were working.

Character of Work of Co-ordinator: The special needs of each position are investigated and by a study of the personality of the girl and her record in school, an effort is made to find the right kind of a girl for each position. Every care is taken to protect the girl; close supervision is made of her work and when undesirable conditions developed that can not be adjusted, she is withdrawn.

FIRMS AND NUMBER OF PUPILS CO-OPERATING WITH THE WASHINGTON IRVING HIGH SCHOOL FROM FEBRUARY TO JUNE, 1917:

Firm	Occupation	Feb. 24	Mar. 10	Mar. 24	Apr. 7	Apr. 21	May 5	May 19	June 2
Grace Daggett	Lamp Shades	4	2	..	..	..	..	..	..
Miss Finch	Dressmaking	2	2	2	2	2	2	2	2
Barnard Studios	Dressmaking	4	..	..	..	..	..	..	..
B. Gordon	Dressmaking	2	2	2	2	2	2	2	2
Harry Collins	Dressmaking	4	..	..	..	..	..	..	..
Little Dress Co.	Dressmaking	..	4	..	..	..	..	..	..
Moe	Dressmaking	..	4	4	4	..	..	..	..
Quality Shop	Dressmaking	2	2	2	2	2	2	2	2
Miss Smith	Dressmaking	4	4	4	4	4	..	..	..
Mood Co.	Dressmaking	..	..	8	16	8	12	14	14
Alperstein & Wittenberg	Dressmaking	..	..	4	4	4	4	4	4
O'Donovan	Dressmaking	..	..	4	4	4	..	..	..
Mss F. Finklestein	Dressmaking	..	..	2	2	2	2	2	2
Rohn & Rienzi	Dressmaking	..	..	14	12	12	..	..	..
G. A. Simpson	Dressmaking	..	..	8	8	8	..	..	..
P. F. McGowen	Dressmaking	..	..	4	4	8	4	8	8
Helen Sheppard	Dressmaking	..	..	4	4	4	..	..	..
M. St. Ledger Hackett	Dressmaking	..	..	..	4	4	4	4	4
B. Altman	Dressmaking	..	..	..	4	4	8	8	8
Anna McNalley	Dressmaking	..	..	..	..	4	4	4	4
Kerkow, Inc.	Dressmaking	..	..	..	..	..	4	..	..
Mrs. Hilda Moburg	Dressmaking	..	..	..	..	..	1	1	1
R. H. Macy & Co.	Dressmaking	..	..	..	..	..	2	2	2
Total pupils		22	20	62	76	72	51	53	53

The seasonal character of dressmaking with the constant change in materials and styles made it difficult to adjust the school program to the trade needs. The busy months are March, April, May, October, November, December. The Easter rush was just beginning to be felt in this school when the survey was made. One interesting feature of the work in this course was the vocational value of French in the dressmakers' shops. To meet this situation a special syllabus was worked out by the French teacher and approved by the Board of Education.

This school was no longer co-operating with firms in the white goods trade because the girls were kept too long in one type of work. Some dressmaking firms had decided preference for cer-

tain nationalities and decided objections to others. The Irish and French girls seemed to be the favorites. Some firms specified that the girls must be good looking and dress well.

Record of Pupils: From the time the co-operative work started on March 31, 1915, up to June 26, 1915, twenty girls entered this course. In February, 1917, they were distributed as follows:

Number of girls now employed	15
Number of girls at home	2
Number of girls in school	3
Total	20

The fifteen girls employed were working at the following occupations:

Dressmaking	7
Private dressmaking	1
Sketching	1
Clerical work	3
Salesmanship in dressmaking establishments	3
Total	15

CO-OPERATIVE SALESMANSHIP COURSE FOR BOYS AND GIRLS IN THE MORRIS AND NEWTOWN HIGH SCHOOLS.

Since the co-operative classes in salesmanship in these two high schools were under the same co-ordinator whose time was divided between the two, the salesmanship course will not be described separately for each school. Since February, 1917, all of the pupils co-operating in salesmanship have been in one of these two schools.

Course of Study: Considerable time has been devoted by the school authorities and representatives from some of the mercantile establishments of the city to the development of a course of study in salesmanship. This course as adopted by the schools is given below:

NEWTOWN HIGH SCHOOL

First Year

General Course.

Second Year

Students attend school full time.

Co-operative Course

English	5
Commercial Arithmetic	5
Bookkeeping	5
Penmanship	..
Local Institutions and Industries	3
General Science	5
Drawing	2
Music	1
Physical Training	2
Elocution	1
	29

Third Year

Students spend one week in store and one week in school.

English, letter writing, saleslips	5
Bookkeeping	5
Penmanship	2
Arithmetic	3
Merchandising—Textiles, non-textiles	5
Spelling	2
Drawing—Color and Design	2
Music	1
Physical Training (Store Hygiene)	2
Commercial Law	..
Elocution	2
	29

Fourth Year

Students spend one week in store and one week in school.

English-Advertising	5
Industrial History	5
Salesmanship and Business Organization	5
Arithmetic	3
Spelling	2
Economics	3
Penmanship	2
Drawing—Color and Design	2
Physical Training (Personal Hygiene)	2
Elocution	1
	30

Results of Salesmanship Courses: The results accomplished in salesmanship have not been entirely satisfactory to either the school authorities or the firms with whom the schools have been co-operating. The table below shows what was accomplished during the half year from January to June, 1917. It will be noted that at the end of this period only three firms were co-operating with the schools in salesmanship and that of the 30 pupils so employed, 24 of them were with one firm:

NUMBER OF FIRMS AND THE NUMBER OF PUPILS EMPLOYED BY EACH FIRM IN SALESMANSHIP, JANUARY TO JUNE, 1917:

(1917)	Jan.	Feb.	Feb.	Mar.	Mar.	Apr.	Apr.	May	May	June
Newtown High:	20	10	24	10	24	7	21	5	19	2
Cammeyer Shoe Co.....	1	1	1	1	1	..	..	..	..	..
Rogers Peet & Co.....	1	1	1	1	1	1	1	..	..	..
Gimbel Bros.....	14	..	..	..	..	..	..	..	..	..
R. H. Macy & Co.....	3	16	14	17	17	14	9	10	10	11
Slater Shoe Co.....	2	2	2	2	2	2	2	2	2	2
Lord & Taylor.....	..	..	3	5	5	5	2	2	2	2
Abraham & Strauss....	..	..	4	..	..	..	..	..	..	..
B. Altman.....	..	..	3	..	..	..	..	..	..	..
Morris High:										
R. H. Macy & Co.....	18	..	14	16	16	16	16	12	..	13
Lord & Taylor.....	..	..	4	8	8	6	2	2	2	2
Gimbel Bros.....	6	..	..	..	..	..	..	..	..	..
	45	20	46	50	50	44	32	28	16	30

THE STUYVESANT HIGH SCHOOL.

It was felt that valuable information might be obtained from the study of the records of the co-operative classes in the Stuyvesant High School. There have been two distinct systems of co-operative work at this school: (1) Fourth-year boys co-operating in technical work, but receiving no pay for it. This work was started in September, 1914, and has continued up to the present time with a considerable degree of success. (2) Co-operation with industrial firms by students who did receive pay for their work. The latter plan began on February 1, 1915, and was discontinued under the re-organization of February 1, 1917.

This school at the time of the survey was co-operating with three private firms and four city departments. The boys received

no pay for their work and those in charge of the co-operative work at this school felt that it was successful largely because of this fact. They felt, too, that the no-pay plan gave the teachers an opportunity to insist that the boys should be shifted to other work when it was considered necessary for the good of the boy. The outside work of the boys, which in general was a practical laboratory course supplementing their regular class instruction consisted of assisting in architectural drawing, mechanical laboratories, surveying, power plant operating, structural engineering, and industrial chemistry.

Several reasons were given by those who had charge of the regular co-operative classes in the Stuyvesant High School for its lack of success. These were: (1) The difficulty of getting the boys to enter the co-operative course when they found out that it would not be accepted for college entrance; (2) The difficulty of arranging equal pairs; this caused objections from the foremen who were responsible for a certain output of product; (3) That when younger boys got good positions they left school; (4) The co-operative work caused the boys to have a divided allegiance between school and shop; (5) That many employers failed to see that the scheme was educational in intent and desired to use the boys as cheap help; (6) The difficulty in making orderly progress of classes by terms fits the needs of the outside shop work; (7) The difficulty in selecting the right pair of boys for the right job at the right time and adjusting school courses to supplement their outside work.

Permanency of the Industrial Co-operative Work.

It is too soon since the co-operative work was first started in New York City to determine its permanent character. The 1914-15 annual report of the part-time co-operative classes lists 27 firms that had co-operated with the schools in industrial work. At the time of the survey eight of these firms were employing boys on the co-operative plan. This same report lists eight firms co-operating with the high schools in dressmaking and five firms co-operating in salesmanship. Not one of these firms in either dressmaking or salesmanship was co-operating with the schools at the time of the survey.

The annual report for the year 1915-16 of the co-operative classes does not list the firms with whom the schools co-operated that year. However, through the courtesy of those in charge of

the co-operative classes, the semi-monthly reports of the co-ordinators for the period from January 8 to December 9, 1916, were secured and a list was made of the firms co-operating in industrial work and salesmanship. There were 40 industrial firms during the year which had one or more pairs of boys. Out of twenty-four firms that were co-operating in September, 1916, thirteen were co-operating at the time of the survey in March, 1917. Of the thirty-seven firms that employed girls from the co-operative classes between January 8, 1916, and December 9, 1916, for industrial work in dressmaking or the making of novelties or lamp shades, twelve firms co-operated for one month, nine for two months, six for three months, three for four months, five for five months, and two for over six months. On December 8, 1916, sixteen of these thirty-seven firms were employing girls from the co-operative classes.

The attitude of the pupils is also a factor that must affect the permanency of the work. Several of the co-ordinators stated that the difficulty of securing a sufficient number of pupils to enter the co-operative course was one of the greatest problems. The annual report of the co-operative classes for the year 1915-16 shows that 88 pupils left the course during the first term and 80 abandoned the course during the second term. Of the first group, one-half of the number or 44 entered employment and 38 of the second group entered employment, eight with the co-operating firms.

The Cost of the Co-operative Work.

The question of the cost of the co-operative work has had considerable discussion and the annual report for the year 1915-16 devotes several pages to this subject. Included in this statement of cost are the salaries of the co-ordinators and the proportional salaries of the teachers, the supervision and the text books and supplies that were given to the co-operative pupils. The per capita cost for each pupil, based on the average attendance for the term, ranged from $36.03 at the Newtown high school with an average attendance of 75 pupils, to $109.60 at the Erasmus Hall High School that had 12 pupils in average attendance. In the other schools it was also true that the cost was high where the average number of pupils was small. The centering of the work in seven high schools has lowered the cost so that it is probably no more than for the regular high school work, but the exact figures were not available when this report was written.

The following table prepared by the school authorities shows the cost of the co-operative work for the first term of the 1916-17 school year:

COST OF CO-OPERATIVE EDUCATION FOR EACH HIGH SCHOOL FOR THE TERM SEPTEMBER, 1916-FEBRUARY, 1917

	Semi-annual salary of co-ordinator	Semi-annual salaries of teachers	Supervision and office	Supplies	Average No. of pupils	Per capita cost
Julia Richman.....(15/100)	$199.00	$294.00	$15.00	$30.00	10	$53.80
Stuyvesant* .....(1/2)	787.00	532.11	12.35	5.00	19	70.63
Washington Irving...(1/2)	437.50	1720.00	25.00	37.60	50	44.40
Bushwick* .....(1/2)	787.50	2979.00	17.04	82.80	46	84.00
Bushwick .....(1/2)	587.50	2031.04	80.44	128.81	103	27.45
Commercial.....(All)	1325.00	1166.00	50.00	105.60	66	40.10
Manual Training....(45/100)	596.00	2470.00	35.25	35.25	47	67.23
Bryant* .....(30/100)	397.50	287.00	24.50	28.00	14	52.64
Newtown .....(1/2)	662.50	1395.00	30.00	38.50	60	35.43
Morris C.....(1/2)	662.50	1395.00	20.00	30.00	40	52.64
Curtis* .....(1/2)	600.00	669.51	27.85	20.00	12	09.78

Average per capita cost for the term, $58.01.
*Work discontinued in February, 1917.

SUMMARY.

The findings of the survey of the industrial co-operative classes show the following:

1. That on March 24, 1917, there were 172 pupils enrolled in the industrial co-operative classes in four high schools. These pupils were distributed as follows:

Industrial Work (Boys).....60
Dressmaking (Girls).....62
Salesmanship (Boys and Girls)....50

2. That the numbers enrolled in the industrial co-operative classes were so small and the occupations represented so diversified that the schools had not organized the school work so as to have it supplement the outside work of the pupil.

3. That 32 of the 40 firms co-operating in industrial work and salesmanship in 1914-1915 were not co-operating at the time of the survey in March, 1917.

4. That much of the time of the co-ordinator was spent in securing new firms to co-operate with the school and in persuading pupils to take this course.

5. That few of the pupils enrolled in the co-operative course in dressmaking have continuous employment for as long as three months with one firm.

RECOMMENDATIONS OF THE ADVISORY COMMITTEE ON CO-OPERATIVE INDUSTRIAL CLASSES.

After carefully weighing the information obtained by the survey committee, and after visiting the co-operative industrial s now in operation in this city, your advisory committee is nvinced that the city should maintain such co-operative classes with certain modifications as noted, at least for a period of several years to come when the question as to the value of such classes can be more fully determined.

Your committee makes this recommendation with a full realization that not many high school students can be counted upon to enter manual occupations in the industries. The ideals of the homes from which come the large body of high school students are directed distinctly away from such occupations for their sons and daughters and it is evident that the contribution of the high school to the field of industry must be found in supplying young men with well trained minds who are fitted after a further period of practical experience to attain to positions of at least subordinate leadership. Such positions have been termed the non-commissioned officers of industry and include draftsmen, inspectors, testers, designers and in general all positions of the supervising and foreman type.

From this analysis it is evident that the co-operative industrial classes in the high schools cannot be expected to teach large numbers and the critical question that ultimately must be faced is whether the return for such work is in proportion to its expense.

The industrial co-operative work should be organized as to trades and each trade should be centralized in one building or school. This centralization of the work is necessary to secure groups of sufficient size to allow the formation of classes of individuals with similar trade interests.

The committee believes that the most satisfactory division of

time for the co-operative industrial classes is half-time in shop and half-time in school as at present.

The co-operative industrial class should be in every sense on an apprenticeship basis. It should never be entered into unless there is a definite agreement with the employer specifying a program of shop experience with the hours of labor and wages. This agreement should be signed by the school authorities, the parent representing the boy and the employer. Without such an agreement it is impossible to serve adequately the needs of the state, the individual and the employer.

Co-operative industrial classes should be limited in so far as practicable to those industries in which at least thirty students are available for a closely related trade group that can be supervised effectively by one co-ordinator.

The co-ordinators should be selected on the basis of the requirements of the particular trade for which the co-operative industrial class is to train. That is, the co-ordinator for co-operative industrial classes in machine shop work should be a man with a thorough understanding of the machine trade. This same principle should be applied to the selection of all other co-ordinators. Each co-ordinator should be at the same time the teacher of related drawing, mathematics, and science for a double platoon group in the school and the supervisor of the work of the students of this group in the commercial establishments. Such a plan would permit both the interests of economy and efficiency to be realized.

The co-ordinator should have authority granted by the employer to see that the program to be followed by the boy in the shop is carried out.

The character of the instruction in drawing, mathematics and science should be such as to secure the greatest possible degree of relation to the trade or occupation in which the student is employed.

It must be kept constantly in mind that the co-operative industrial course is not a college preparatory course, but that it is a course, the predominant purpose of which is to train the student for advantageous entrance into a specific industry.

In addition to the related work instruction should be provided as far as practicable in those subjects which make for intellectual, social and civic development.

Inasmuch as the co-operative industrial classes have many

aspects in common with the part-time industrial classes, it is recommended that both types be placed in charge of a common assistant director responsible to the director of industrial education.

In the opinion of the advisory committee the entrance requirements for the industrial co-operative classes should be based upon age rather than the completion of the first year of the high school course.

R. O. Small,
E. A. Cooley,
M. B. King.

PART-TIME INDUSTRIAL CLASSES.

It should be understood that two distinct kinds of part-time or continuation classes exist at the present time. One is that created by the provisions of the so-called Wilmot Law which makes it possible for any city in the state to organize day continuation classes and to compel working children under 16 years of age who have not completed the eighth grade to attend not less than four nor more than eight hours per week. This law aims to further the general education of children who have left school before completing the grammar school by providing opportunities for instruction in the day time instead of in the evening.

The other type of part-time class is that in which instruction is given in the trades and industrial, agricultural, salesmanship and homemaking subjects with the object of increasing efficiency and wage earning power, to pupils over 14 (now 15) years of age who are employed during the day. Inasmuch as very few boys under 16 years of age are employed in skilled trades, attendance in these classes is largely voluntary. Voluntary part-time classes are also organized for workers over 16 years of age. The present survey deals with the second type.

It may help to an understanding of the general situation in regard to part-time classes if some account is given of the conditions under which they came into existence in New York City.

The following statement as to the development of the continuation work is taken from the report of the City Superintendent of Schools for 1915-16:

"Continuation classes as now conducted in New York City are a natural outgrowth of the evening school work. It has been found by long experience that evening school instruction is not very profitable for working children under 16 years of age. At the same time it is evident that this large group of young workers is very much in need of further education. The Wilmot Law, passed in 1913, makes it possible for any city in the state to organize day continuation classes and to compel working children under 16 years of age who have not completed the eighth grade to attend not less than four nor more than eight hours per week. Before making the law effective in this city, it seemed wise to see what could be done on a voluntary basis, that is, with the consent of employers and employees. This gave an opportunity to start in

a small way, and to develop an organization gradually and on the basis of experience, instead of attempting to work out in advance a theoretical organization and then apply it as might be possible. It also gave opportunity to accustom employers to the aims and purposes of continuation classes before compelling the attendance of young workers for a certain number of hours per week.

"Even before any continuation classes were established for working children 14 to 16 years of age, steps were taken which led to the organization of such classes for older workers. The first step was the organization of evening classes in the establishments of the employers. For example, in 1913, an evening class in English to foreigners was authorized by the Board of Education in the Hotel Astor, at the request of the management. It was more convenient and more satisfactory to conduct the class in the hotel as an annex of evening school 17, Manhattan, than in the school itself. The next logical step, which was soon taken, was to open day classes for workers in their places of employment, conducted during such hours as the employees could most conveniently be excused from work.

"From these two movements, both growing out of the evening schools, in connection with the growing interest in vocational education, have come the day continuation classes now carried on in the City of New York.

"The first day continuation class authorized by the Board of Education was in the department store of Abraham & Straus, Brooklyn, in 1913. The second class was in the department store of Bloomingdale Bros., Manhattan. This was authorized January 28, 1914, and opened the same week. During the following month classes were authorized in the department stores of Frederick Loeser & Company, and A. D. Matthews' Sons, in Brooklyn. Before January 1, 1915, arrangements were made with ten department stores, three hotels, two candy factories, and three or four large manufacturing plants and repair shops for the opening of similar classes. For various reasons classes were not organized in all these establishments, but in nearly all. The growth has continued steadily. During the school year ending June 30, 1916, the largest number of classes in operation at one time was 38."

The Board of Education passed resolutions September 16, 1914, authorizing the organization of co-operative and part-time industrial classes, appointing Associate City Superintendent Dr. J. G. Haaren to take charge of the work of organizing and supervising these classes. In October, 1914, Dr. Schneider was appointed to act in an advisory capacity to Dr. Haaren, on the understanding that he should spend one week each month in New York City. At a conference with the executive officers of the city government and Board of Education "It was determined that the amount of $236,500 be set aside for the inauguration of

vocational courses, and that this money should be released by the Board of Estimate when plans for its distribution had been approved by the Board of Education." Of this sum "It was agreed that a sum not to exceed $100,000 was to be used for the particular experiment inaugurated with the advice of Dean Schneider," i. e., co-operative and part-time industrial classes.

In a report made August 20, 1915, Dean Schneider says: "There are three things essential to success in co-operative and continuation school work—a desire on the part of the school men really to do it; a thorough understanding of the basic principles and a carefully planned organization."

Aims, Types, Definitions: The following definition of continuation schools is quoted from Dean Schneider's report to the committee on school inquiry: "Under the continuation system the employer releases his employees of school age for a period of time (i. e., one-half day or a whole day) per week to attend the public school for definite mental instruction."

The following statement is from the report on continuation and co-operative classes presented by Dr. Haaren to the Board of Education November 10, 1915: "Continuation classes are concerned with persons who are in industry and who have consequently left school. Continuation classes are of various kinds. Some classes receive instruction designed to increase the skill of workers in the industry, while others receive instruction planned to remedy defects in early education. A machinist's apprentice may need instruction in shop mathematics, or mechanical drawing, while a young man or woman engaged in a department store in a minor capacity may require greater skill in the three R's. It may be that a machinist, as well as a department store employee, or one in a hotel, needs to learn elementary English. To supply what is needed to increase civic and industrial efficiency, particularly of the lower paid workers, is the function of the continuation class. Continuation classes are not intended solely for the benefit of the industry. Classes with such an aim should be organized and conducted by the industry itself."

As the State of New York provides liberal state aid for part-time industrial classes, we must take into consideration the stated aims, definitions and requirements, as set up by the state. The following is quoted from Bulletin 542, of the State Education Department: "Part-time or continuation schools are those in which instruction is given in the trades and industrial, agricultural and homemaking subjects to pupils over 14 years of age

who are regularly and lawfully employed during part of the day in any useful employment or service, and the subject of the instruction must be supplementary to the practical work carried on in such employment or service." This definition has been interpreted to include continuation classes in which salesmanship is taught.

Continuation and Part-Time Industrial Classes: The following table shows the total number of the continuation and part-time industrial classes under the Board of Education for the week ending April 21st, 1917:

REPORT OF CONTINUATION CLASSES—WEEK ENDING APRIL 21, 1917

Voluntary Classes

Firms in Which Classes Are Conducted	Designation of Classes	No. of Classes	Subjects Taught	Average Attend.	Hours Taught Per Week
Abraham & Straus	Girls, women	1	Com. Br.	20	7½
Bloomingdale Bros.	Girls, women	1	Com. Br.	20	5
F. Loeser & Son	Girls, women, boys	2	Com. Br. (4)	42	4
A. I. Namm & Sons	Girls, women	2	Com. Br. (13)	40	5
R. H. Macy & Co.	Girls, women	1	Com. Br.	23	10
Greenhut & Co.	Girls, boys	2	Com. Br. (19)	37	5
H. C. F. Koch	Girls, women	2	Com. Br.	39	4
Lord & Taylor	Girls, women, boys	2	Com. Br.	38	5
Gimbel Bros.	Girls, women	1	Com. Br.	21	5
James McCreery & Son.	Girls	1	Com. Br.	22	5
Oppenheim Collins & Co. (Manhattan)	Girls, women	1	Com. Br.	20	8
Oppenheim Collins & Co. (Brooklyn)	Girls, women	1	Com. Br.	22	8
Floersheimer & Co.	Girls, women	1	Com. Br.	18	4
J. Kayser & Co.	Girls	1	Com. Br. (2)	23	4
G. Bamberger & Co.	Girls	1	Com. Br. (2)	20	2
Educational Alliance	Men, women, girls, boys	3	Eng. to For.	61	10-8
P. S. No. 4, Bronx	Women, men	1	Eng. to For.	17	8
Bronx House	Women	2	Eng. to For.	42	10
Kops Bros.	Women, girls	1	Eng. to For.	15	5
Long Island R. R. Co.	Boys, men	2	Trade	27	4
Richmond L't & R.R. Co.	Men	2	Trade	29	4
Baltimore & Ohio R. R.	Boys	1	Trade	6	3
General Electric Co.	Boys, men	1	Commercial	14	5
Metropolitan Eng. Co.	Boys, men	4	Trade	55	3
Bklyn Navy Yard, Bklyn.	Boys, men	9	Trade	195	8
		46		866	

Compulsory Continuation Classes

Firms in Which Classes Are Conducted	Designation of Classes	No. of Classes	Subjects Taught	Average Attend.	Hours Taught Per Week
P. S. No. 7	Boys, girls	8	Com. Br.	631	4
P. S. No. 7	Boys, girls	7	Prevocational	...	..
P. S. No. 65	Boys, girls	7	Com. Br.	403	4
Bernard Ullman Co.	Girls, boys	1	Com. Br.	27	4
Jas. A. Hearn & Son	Girls	3	Com. Br.	68	4
		26		1129	..

Continuation Classes City Employees

City Employees	1	Ele. Algebra	15	5
City Employees	1	Plane Geometry	12	5
City Employees	2	Bookkeeping	22	3
City Employees	1	Ele. Typewriting	37	4
City Employees	1	Adv.Type.&Sten.	28	2
City Employees	1	Element'ry Sten.	41	2
City Employees	1	Int. Stenography	34	2
City Employees	2	Eng. Comp. 1, 11	26	2
	10		215	..
Grand Total			2210	

Scope of Survey: The survey of continuation classes was limited to such classes as might be eligible for state aid, i. e., part-time industrial classes, including salesmanship classes. The provisions made for state aid state definitely that "The subjects of the instruction must be supplementary to the practical work carried on in such employment or service." The state law does not provide special aid for the general continuation work.

The following list of firms having part-time industrial classes coming under the above definition was furnished by Dr. Wm. L. Ettinger, Associate City Superintendent in charge of vocational work:

Baltimore & Ohio R. R. Shops, Clifton, S. I.
Long Island R. R. Shops, Morris Park, L. I.
Metropolitan Engineering Co., Brooklyn, N. Y.
Brooklyn Navy Yard, Brooklyn, N. Y.
Richmond Light & R. R. Co., Livingston, S. I.

All the classes studied are listed as voluntary classes by the Board of Education because the pupils enrolled in these classes

are above the compulsory school age. In all of them, except one, however, the employer compels certain employees to attend.

PART-TIME INDUSTRIAL CLASSES AT THE BROOKLYN NAVY YARD.

Organization: The part-time industrial classes at the Brooklyn Navy Yard were started February 26, 1917. These classes were visited by members of the survey six weeks after the work was organized. There are 227 boys enrolled. Their ages range from 15 to 22 years. Of these boys none had graduated from high school, 45 had attended high school, 64 had done no work beyond the eighth grade, 118 had not completed the work of the eighth grade. Of the total number of boys 59 had attended night school and two had taken correspondence courses.

Every boy in the classes is regularly apprenticed to some specific trade in the Navy Yard. The apprenticeship term is from three to four years, depending on the ability of the boy; about 30 per cent finish their apprenticeship in three years. The apprentices are given a semi-yearly examination by the officers of the Navy Yard and the part-time industrial teachers. If the boy does not do satisfactory work in the examination or in the shops he is dismissed or held back. The Navy Department officials compel all the apprentices to attend the part-time industrial classes, eight hours a week from one o'clock to five o'clock on two days of the week and they are paid the regular wage for the time spent in the class. The classes are under the direct supervision of an officer of the Navy Yard assigned for the purpose. A petty officer is present continuously during the sessions of the classes and is responsible for the attendance and to some extent the discipline.

For the purpose of the part-time industrial class work the 227 boys were organized into the three groups called "A", "B" and "C" groups, representing the ship construction, machinery division and woodworking trades. Classes in each group are arranged so that only one-third of the boys are out of the shops at one time.

It is the aim of those in charge to group the apprentices in the classes as far as possible, according to their year of apprenticeship. This has been done in classes No. 2 and No. 3 and partially in the other class. The table showing the distribution of

the boys in regard to groups, classes and trades was made up from a report dated February 26th, 1917, of the supervisor in charge.

TABLE SHOWING THE DISTRIBUTION OF PUPILS BY CLASSES AND TRADES IN THE BROOKLYN NAVY YARD PART-TIME INDUSTRIAL CLASSES

Trades	Class 1.	Class 2.	Class 3.	Trade Total.
Group A:				
1. Shipfitter	12	27	17	56
2. Chipping and caulking	0	4	2	6
3. Sheet metal working	8	5	0	13
4. Shipsmith—ship blacksmith	3	1	8	12
5. Plumber	3	3	2	8
6. Boilermaker	3	0	1	4
Class Totals	29	40	30	99
Group B:				
7. Boatbuilder	4	13	12	29
8. Joiner	5	2	0	7
9. Shipwright	2	1	5	8
10. Patternmaker	2	0	0	2
11. Painter	2	2	0	4
12. Sailmaker	0	2	0	2
Class Totals	15	20	17	52
Group C:				
13. Machinist	9	15	5	29
14. Electrician	16	14	7	37
15. Coppersmith	1	1	1	3
16. Die sinker	2	0	0	2
17. Moulder	1	2	2	5
Class Totals	29	32	15	76

An important element in the success of part-time industrial work and one which is emphasized by the rules of the State Education Department in order to secure state aid is that the school work of the class shall be directly related to the shop work. This can be done, most successfully only when a specific trade is taken as the organizing unit. When it is necessary to group apprentices from two or more trades together the classes should be small enough so that the instruction can be individual. A study of the above table will show that neither of these principles is present in the organization of most of these classes.

Courses of Study: The subjects taught are mechanical drawing, mathematics, mechanics and English, one and one-quarter hours being given to each subject with five minutes between classes. On account of the short time that these classes have been in existence no definite course of study has been adopted.

Relation Between School Work and Shop Work: In the mechanical drawing classes the work observed consists of geometrical exercise drawing. In the mechanics and English (same period and teacher) the work observed consisted of a formal lecture on some formula of mechanics or some phase of metallurgy, and the English work dealt with a written summary of the lecture. One lesson observed in this class was on the blast furnace, a topic full of possibilities for interesting correlations. During the entire lesson the instructor used no demonstration materials, models, blue prints, lantern slides, blackboard drawings nor did he make any reference to the several cupolas in the Navy Yard. In mathematics the work observed consisted of review exercises and demonstrations of the fundamental operations. No text books were used in any of the classes. In the teaching observed there was very little correlation between the class work and the daily work of the boys, and none at all with the specific trade to which the boy was apprenticed. The methods used were largely those of formal teaching with a very few practical applications brought in afterwards as incidental. It seems surprising that in such a rich environment as the Navy Yard, with such hearty co-operation on the part of the officials, that so little endeavor was made to use the environment and the experiences of the boys as part of the teaching process. At the time of the survey none of the teachers had visited the shops or talked to the foremen in the shops, or visited the boys at work, except one who is regularly employed in the Navy Yard.

Teachers: There are three teachers employed by the Board of Education for the part-time industrial work in the Navy Yard They are rated as substitute teachers and teach at the Navy Yard four hours per day. They are paid at the rate of $6.00 for the four hours. All are fully occupied at other business in the mornings. One teaches two mornings each week for the Board of Education in other part-time industrial classes and works four mornings in a machine shop. Another is regularly employed at the Navy Yard. The third is temporarily employed at civil

engineering work. Two teachers have engineers' degrees, the other has completed three years' work toward the bachelors' degree. All three teachers have had practical experience in the industries and at present are occupied part of the time in practical work. The supervisor from the Board of Education visits the classes twice a week, holding conferences with the teachers and observing the work of the classes.

Building Equipment, Supplies: All the classes are held in the large social hall of the Navy Yard. This makes the teaching somewhat difficult as the attention of the students is being continually distracted by the other classes. This condition is soon to be remedied by installing movable partitions.

The equipment is satisfactory in most respects and is being added to and improved continually by the officials of the Navy Yard.

All supplies for these classes are obtained from the Navy Yard stores, so that these teachers avoid the delay usually attendant upon obtaining supplies from the Board of Education store room.

Attitude of Employers: The classes are visited every day by the naval officer in charge, another subordinate officer being present most of the time. The Navy Yard officials are very enthusiastic about the part-time industrial classes, and are willing to co-operate in every way to make the work a success. Personal interviews were held with the four officials directly concerned; one of them expressed himself as feeling that the teachers were not yet in touch with the real problems and needs of the boys in the classes; another one said, "Everything in the Navy Yard is at the disposal of these classes and their teachers. They can go anywhere and use anything in the yard."

THE PART-TIME INDUSTRIAL CLASSES AT THE LONG ISLAND RAILROAD SHOPS, MORRIS PARK, L. I.

Organization: The part-time industrial work was organized in these shops on June 14th, 1915. There are two separate classes, one from eight to ten, Monday and Wednesday mornings, the other from ten to twelve on the same days. The classes are conducted fifty weeks in the year. One class of twelve boys was composed of machine shop apprentices, the other class of thirteen boys included electricians, blacksmiths and pattern-makers' ap-

prentices. The apprentices attending these classes are employed in the general repair shops of the railroad and are given a splendid opportunity to secure a broad shop training. The boys are compelled by the employer to attend these classes and are paid their regular wages for the time spent in class.

The previous education of the boys in these classes ranges from the sixth grade to the second year in high school. They were from 15 to 22 years of age.

Course of Study: An attempt was made to secure a course of study from the teacher but one could not be obtained. Three subjects were taught by one teacher to all classes; mechanical drawing and blue print reading one period each week, mathematics one-half period per week and English one-half period per week. Instruction in mechanics was also being given at intervals.

Relation Between School Work and Shop Work: The work in mechanical drawing was largely individual owing to the varying rate of progress of the pupils. The larger part of the work was being done from blackboard sketches and other drawings. There was very little evidence of drawings of shop models, tools or machines, and none of locomotive parts.

In the work in mathematics the difference in the previous education of the boys showed up strongly. To many of them the work was simply a review of what they had done in school; to others it was far too difficult. There was very little individual teaching.

On the day that the writer visited this shop a lecture had just been given in the mechanics class on the theory of the gas engine. On inquiry it was found that no gas engines were used or built in the shops. The English work was given at the same time as that in mechanics and consisted of note book work and drill in oral expression.

The same teacher has been employed for these classes for the past six months. Up to the date of the survey he had not visited the shops, or the boys at work, the superintendent or the foreman. He is employed by the Board of Education for the work, two mornings each week, from 8 to 12 for which he is paid $6.00 per morning. He is also employed by the board every afternoon, teaching other part-time industrial classes, his other mornings being spent in machine shop work. He has had ten years' practical experience as draftsman, engineer and machinist. Although

the classes have been in operation for two years, a system of tests and reports to the shop superintendent has only just been started. This was done at the urgent request of the shop superintendent, who made this request because of his impression that the company was not deriving the benefit that it should from the class work.

Rooms and Equipment: The room provided for these classes is unsuited for school purposes, being a portion of a paint shop, dark, dirty and noisy with a very disagreeable odor of paint. The benches on which the drawing is done were decidedly shaky, it being practically impossible to do good work on them.

Attitude of Employers: Interviews were held with the superintendent of the shop and with the foreman of the machine shop. Both expressed an earnest desire to make the work of the part-time industrial classes more successful. The superintendent expressed himself as not being entirely satisfied with the work of the class. He expressed a desire to have it more thoroughly organized in the direction of systems of testing, grading and promotion which should measure the progress of the boys. Both foreman and superintendent felt that the work thus far had not been of much value to them in a practical way due in part to the fact that the boys did not remain long with the firm.

THE PART-TIME INDUSTRIAL CLASS OF THE BALTIMORE AND OHIO R. R. SHOPS, CLIFTON, S. I.

Organization: This class was organized September, 1914. The sessions are from 7:15 to 8:15 every morning in the week, making a total of six hours per week for all apprentices. The enrollment was low at the time of the survey on account of abnormal trade conditions, it being difficult to get boys to start the four years' apprenticeship course at the beginning wage.

Classification of Pupils: All the boys are regularly apprenticed to specific trades in the shops. They are compelled to attend by the company and are paid their regular wage while attending class. Of the eight apprentices at present in the class, six were machinists' apprentices, one a carpenters' and one a boiler makers' apprentice.

Courses of Study: Mechanical drawing is taught on Mondays, Wednesdays and Fridays, mathematics on Tuesdays, Thursdays and Saturdays.

Relation Between School Work and Shop Work: In mechanical drawing the work of the class is closely related to the specific trade of the boy, the machinists' apprentices drawing machines, engines and parts; the carpenter apprentices drawing frames for buildings, construction work, etc., the boilermakers' apprentices drawing parts of locomotive boilers and developing patterns, the drawings being made almost entirely from parts borrowed from the shops. The work in mathematics is of a practical character and related to the trade, the method being to develop the practical use and need, show methods of solving, then state the formula and develop short cuts, with use of tables. The work in both classes is entirely individual and the standards of work are high. The books used as reference books in the mathematics class are: "Shop Mathematics," Holton; "Practical Applied Mathematics," Hale; "Mathematics for Machinists," Burnham; "Shop Problems in Mathematics," Breckenbridge, and the texts of the Baltimore and Ohio apprentice course of Mt. Clair, Md.

Teachers: Two teachers are employed for this work by the Board of Education, one for mathematics and one for mechanical drawing, both teach three hours per week. They regularly visit the shops, are well acquainted with all the foremen and know what each boy is doing in the shop. Both have had some practical experience in the trades and are regularly employed during the day by the Baltimore and Ohio Railroad Company; one is chief clerk to the master mechanic, the other is draftsman in the same department. Each has worked out a course of study to meet the needs of the boys, their chief aid being the apprentice courses from the Baltimore and Ohio Apprentice School at Mt. Clair. On the other hand neither of these teachers has ever attended any conference of part-time industrial class teachers or visited any other part-time industrial classes.

Equipment: The classes are held in an ordinary passenger car which stands on a convenient side track. Drawing tables are fitted over the backs of the seats and the car is well lighted, heated and ventilated. The company furnishes all the blue-

prints, tracing paper, blue-print paper and tracing cloth. The Board of Education furnish drawing boards, paper and instruments. The teachers are given any extra time necessary to prepare material for the class and are allowed to use any part of the shop equipment or material desired. These teachers have visited evening classes at Pratt Institute, Murray Hill Evening Trade School and the Dickinson High School.

Attitude of Employers: The master mechanic and foremen visit the class regularly and know what each boy is doing; the representative of the Board of Education visits the class once about every three weeks. The company gives prizes of books for good work and pays the expenses of a trip to their other plant at Mt. Clair, Maryland, for the best boys. The attitude of the representatives of the company was all that could be desired. They visit the class regularly, giving encouragement, substantial help and constructive criticism. They expressed themselves as being perfectly satisfied with their teachers and with the work which they were doing. They would be glad to start classes in industrial chemistry and applied physics.

THE PART-TIME INDUSTRIAL CLASSES OF THE RICHMOND LIGHT & RAILROAD CO., LIVINGSTON, S. I.

Organization: These classes were established by the Board of Education, November 10, 1914. The hours are from 7 to 9 Monday, Wednesday, Thursday and Saturday mornings.

Student: The students are all over nineteen years of age and attendance in the class is voluntary, the class being open to any employee who cares to come. The firm pays the regular wage for the time spent in class, the estimated average wage being about 30 cents per hour. The total number of employees is 150, the average number enrolled in the continuation class is 38, with an average attendance in each class of 15. The trades represented in each class are electricians, machinists, pipe fitters, riggers, repair men, construction men and meter men, with oilers and helpers of various kinds.

Courses of Study: Elementary mechanical drawing is given on Monday; advanced mechanical drawing and blueprint reading, cost and quantity estimating on Wednesday; mathematics on Thursday; elements of steam and electricity on Saturday.

Relation Between School Work and Shop Work: The teaching in both classes in mechanical drawing was entirely individual, each student being given what he needs and wants, and advancing as rapidly as his ability allows. The purpose of the class is not to make draftsmen, but to enable them to make freehand mechanical sketches; to read drawings and blue prints; to figure quantities and to estimate costs. Some were working on the simple orthographic projections, others on machine drawings, others on building plans and still others were estimating costs and quantities; all in the same class. No text books were used, samples being taken from the daily work and the operations of the plant. In mathematics the work was partly class work and partly individual, fundamental algebraic operations and simple equations were demonstrated and applied immediately to practical problems. The work in elements of steam and electricity is given in the same way. The chief reference books in these two classes were "Mathematics for Machinists," Burnham; "Elements of Electricity," Timbie.

Teachers: Two teachers are employed by the Board of Education, one for the mechanical drawing, four hours per week, one for the mathematics and elements of steam and electricity, four hours per week; both are ranked as substitute teachers and are paid $1.50 per hour. Both are regular employees of the company, one as chief operating engineer, the other a draftsman having charge of the construction work.

Rooms and Equipment: Two rooms in the office building are used for the continuation class work. They are roughly furnished, but seem to be entirely satisfactory for the purpose of the class work. The lecture room equipment consists of one small blackboard and several rough board benches, with a set of shelves for storing demonstration material. The mechanical drawing room equipment consists of several rough board tables for drawing, one table for the teacher and a set of small shelves for demonstration models. Both rooms are well lighted and ventilated.

Attitude of Employers: The employers are very favorable to the continuation class idea, and if for any reason the classes decrease in size the superintendent and foreman go around the shops and urge the men and boys to attend. The teachers are allowed all the extra time they need to prepare for their class work and

the services of other employees is freely given to prepare any material needed. The classes are supervised very closely by the employers, being visited nearly every day by some official or their representative and the teacher holds daily conferences with the superintendent. The representative of the Board of Education visits the class about once every two weeks.

PART-TIME INDUSTRIAL CLASSES OF THE METROPOLITAN ENGINEERING COMPANY, BROOKLYN, N. Y.

Organization: The Metropolitan Engineering Company, of Brooklyn, has four continuation classes, the hours being from 4 to 5:30, two classes meeting on Monday and Wednesday, and the other two on Tuesday and Thursday. The classes were organized September 13, 1915, and the boys are required by the company to attend them. Most of the boys work on piece work, but are paid a flat rate for two-thirds of the time spent in class. This rate of compensation varies from fourteen to twenty-five cents per hour. The company makes a very extensive line of electrical parts for use in construction work. The classes have an average attendance of seventy-eight and the boys' ages vary from sixteen to twenty-two years. They are not learning any specific trade, but are doing routine work requiring a considerable degree of manual dexterity, for which they receive good wages.

Most of the boys were working at semi-skilled work. Their job can in no way be looked upon as a trade and it offers very little opportunity for advancement to skilled work with this firm, or any other firm. Neither can it be looked upon as a suitable occupation for adults. This makes the problem of related work quite difficult. It also raises the question as to whether the instruction can be considered as trade extension work.

Courses of Study: The class work consists of mechanical drawing one and one-half hours per week; shop arithmetic three quarters of an hour per week; English three-quarters of an hour per week. Complete syllabi for these courses have been worked out by the supervisor in charge of these classes.

Relation Between Class Work and Shop Work: The type of work the boys perform in the shop makes it difficult to relate the class work very closely to the shop work. In the mechanical drawing class, however, an attempt was being made to make the work practical and related to the shop work. The models used

were largely those that the boys were working with in the shops. There was no geometrical drawing, but plenty of freehand orthographic sketches. A few drawings were made that were copies of other drawings. In the shop arithmetic class the work was primarily a review of the regular work pursued in the grammar grades. Very little evidence could be seen of any correlation with the work of the boys, or of the products of the firm. The English was to an extent correlated with the daily work of the boys.

Teachers: At the time of the first visit to these classes two new teachers were being installed, one class having had three different teachers in the previous four weeks. There had been an entire new force of teachers in the previous two weeks. At present there are two teachers employed six hours each per week by the Board of Education for these classes. They are paid $1.50 per hour for this teaching. They teach in other schools during the remainder of the day.

Room and Equipment: The room assigned to the class is satisfactory for the purpose, it being the best in all the part-time industrial schools visited. It is suitably equipped with chairs, drawing tables, blackboards, and cases. A partition is to be built in the middle of the room, making it into two separate rooms.

Attitude of Employers: The officials of the company interviewed, the superintendent and the foreman are all very enthusiastic about the part-time industrial work. The classes were organized at their request. When advertising for help they make a statement that they conduct a part-time industrial class and that the quality of the applicants for positions had improved very much since the classes were started. They expressed an entire willingness to do anything to improve the work of the classes. They feel that the Board of Education is not properly supporting the work, in that they have failed to supply competent teachers who understand the part-time industrial class. They expressed a willingness to pay the entire salary for the teachers themselves, if good ones could be obtained; also to employ them regularly in the factory or office for full time, if that would assure good teaching. They are willing to start two more classes, if the Board of Education will supply good teachers. They favor the establishment of courses in related elementary electricity, correlated physics and chemistry and a course in the study of material. They advocate not more than ten boys to one teacher, as they feel that

this limitation is necessary to obtain good results in this type of work. The company supplies to the classes complete files of the "American Machinist," "Electrical World" and "Iron Age"; but so far the teachers have made no use of the magazines in the class room.

The classes are visited nearly every day by a representative of the firm and about five times a month by a representative of the Board of Education.

SUMMARY.

The findings of the survey of the part-time industrial classes show the following:

1. That the part-time industrial work represents but a small part of industrial instruction offered in New York City. The report for the continuation classes for the week ending March 31, 1917, shows that there are 344 students enrolled in the part-time industrial classes. This number is about 16 per cent of the total number of pupils in continuation classes.

2. That certain conditions in this work arising from the fact that many classes are made up of pupils from different trades or branches of the trade make it difficult to correlate intimately the instruction with the shop experience of the pupils.

3. That the teachers of these classes receive practically no specific preparation for the special problems of this type of teaching.

4. That the salary and assignment of work render it difficult to obtain men with special training for these classes.

5. That the teachers who are employed in the shops of the establishments offering courses have uniformly acquainted themselves with the shop work of the pupils. At the time of the survey, few of the other teachers, however, had visited the shops, or the boys at work.

6. That the employers favor the part-time industrial classes and are working for their improvement.

7. That the contribution of the employers in apprentice wages and cost of materials amounts to more than that spent by the Board of Education for salaries and materials.

REPORT OF THE ADVISORY COMMITTEE OF PART-TIME INDUSTRIAL CLASSES

Part-time industrial classes, as conducted in New York City, may be considered under two heads: (1) Compulsory classes organized under the provisions of the Wilmot law for children who have been granted working papers but who have not graduated from the elementary school, and (2) voluntary classes for those who have fulfilled the compulsory school requirements and who are employed in occupations for which it is possible and desirable to give specific supplementary training, calculated to better fit the employees for the positions in which they are now employed, and for advancement to better positions.

While the report of the survey which was submitted to the committee has dealt with but the second class of young workers mentioned above, your committee nevertheless feels it to be desirable at this time to emphasize the great need for providing a scheme of continued education for all boys and girls between the ages of 14 and 18 years who leave school and go to work.

No comprehensive or fully adequate system of education can permit thousands of young people who, at 15 years of age, have reached but the end of sixth grade, or who are merely 14 years of age though having finished the eighth grade, to go out into industry upon a single program of mere employment.

The fact is deserving of great emphasis that young people, even under the most favorable circumstances, cannot be sufficiently well educated and otherwise developed so that by the end of their thirteenth year, or during their fourteenth year, they may be permitted in large numbers to enter industry upon the terms of opportunity that industry now offers without grave danger to themselves and to society.

Legal restrictions upon hours of labor of children afford some protection. A few further legal restrictions afford a measure of protection from physical accident and minimize the moral hazard. And yet some of these beneficient restrictions serve to increase the educational hazard in that they narrow the field of choice of work of these boys and girls to the educationally "denatured" juvenile jobs so frequently described as "dead end" or "blind alley."

These juvenile jobs are not, as a rule, beyond the strength and capacity of boys and girls to master. They are of kind where youth is an asset. They are frequently relatively well paid. The danger lies in the fact that, with rare exceptions, they do not provide an experience that is useful as a preparation for better paid adult positions, which these young people must later enter if they are to be adequately self-supporting, and that, on the other hand, as a rule they make no demands upon the education with which the boys and girls come to them. As a result, the very elementary education—the minimum essentials of which have been provided at great expense by the community—is sloughed off to an alarming extent during these first years out of school.

If valid and necessary to make this investment in education, in the first place, it is imperative that steps be taken to conserve the investment in the second.

Another serious defect to be remedied arises from the fact that, during the years spent in the kind of employment of which we are speaking, neither parents nor employers are doing anything, except in special instances, to stimulate the young people to adopt a forward-looking program for themselves, and indeed often unintelligently and even selfishly oppose their efforts, when, by chance, they make the effort.

The community has undoubtedly the right to fix the terms upon which minors may enter industry. The community just as surely is under obligations to provide further part-time educational opportunity and guidance during this most critical and formative period between the ages of 14 and 18 years.

It requires no elaboration to convince anyone of intelligence that the initial entrance into industry, made at a period which coincides with the otherwise most critical period in the lives of boys and girls, is no time for the educational machinery to abandon them to their own devices and the blind forces of industry.

Legislation, and the public school alone, can deal adequately with the problem, and therefore upon the public school authorities devolves a great responsibility. To fail to act would be most inconsistent with the social claims of the modern school system, and would fall far short of educational statesmanship. The schools for the masses must not cease where those for the favored few begin.

The arguments for this work are by no means exhausted. Attention might be called to the fact that thousands of the boys and girls for whom it is asked that this part-time instruction

shall be provided, are entitled to sit five days a week in the public school and have the public pay the bill. Instead, they are at work earning millions of dollars yearly, which money they take into the homes of the most needy, where it both helps to support the families and to pay the taxes. They are also making their contribution to the industry, and must not be regarded as a burden upon industry, for, while we most often think of employers paying wages to employees, it is quite as correct to speak of employees paying a profit to employers.

Every consideration of justice, every prompting of generosity, every demand of efficiency in its best sense, requires that the problem of providing adequately for the continued education of the thousands of boys and girls leaving school at 15 years of age be met promptly and courageously, particularly in all of our large cities.

Turning to the second or voluntary group with which the report of the survey has to do the advisory committee is convinced that the city should maintain part-time industrial classes for these young people.

While the arguments set forth in regard to the necessity for further education of the first group apply equally well to the second, other factors set forth below influenced your committee in reaching its conclusions with regard to part-time industrial classes.

The individuals in the second group have definitely started upon an industrial career. The degree of success which will come to any of these individuals depends largely upon the degree of intelligence that they develop concerning the methods and activities of the trade in which they are engaged, that is, upon their knowledge of the mathematics bearing upon trade processes, upon the elementary scientific principles involved, upon their comprehension of technical processes, their acquaintance with the qualities and properties of materials used and upon their ability to deal with correlated factors, such as reading and making drawings and the interpretation of shop orders and reports.

As the industries are organized at present, there is little or no chance for an individual to secure systematic training in anything other than the manipulative side of the trade unless it be given by instructors employed for the purpose, and at a time definitely set aside. A few employers are willing to go to the trouble and expense to provide such instruction, the majority are not. Because of this it has become the duty of the public to

provide facilities for such instruction through the maintenance of part-time industrial classes. This can be done economically and efficiently only through the agency now organized to care for public instruction.

Any program which has to do with part-time industrial classes for minors employed in occupations for which it is possible to give specific supplementary training should be based upon the principle that there are three parties to be considered—the State, the individual and the employer.

The instruction in part-time industrial classes should consist in part of subjects such as drawing, mathematics, and science related to the industrial needs of the occupations in which the workers are employed, and in part of subjects which will contribute to the employee's intellectual, social and civic development.

It should also be noted that the development and advancement of the employee will depend fully as much upon the extent to which he is given the opportunity for breadth and scope of training inside the establishment as upon outside instruction.

The administration of the part-time industrial classes should be placed in the hands of the public school authorities, and should center in a director of industrial education who should have an assistant in specific charge of these classes. This assistant should have power of initiative in all matters relating to the part-time industrial classes, such as courses of instruction, location of classes, training and selection of teachers, equipment and supplies. Such a plan would clothe those who administer the work with sufficient power to meet the many exigencies which are sure to arise in connection with part-time instruction and fix responsibility for results.

From the reports submitted to your committee and from such observation as the committee has made, it feels that certain weaknesses of the part-time instruction as it exists at present is largely due to the lack of such centralized authority.

All part-time industrial classes should be organized as to trades and not as to time served in industry or educational qualifications or age of pupils. Because of the inevitable variations in age and previous school experience there should not be more than twenty students enrolled in a class at any one time. By limiting the number to this extent individual instruction which is essential can be provided.

To secure the maximum amount of benefit for the individuals

in a part-time industrial class it is essential that workers from one industry, trade or occupation be grouped together, rather than a number of workers from a variety of industries, trades, or occupations. The workers in a machine shop should be grouped together, workers from a woodworking shop should be grouped together. Workers from a woodworking shop and workers from an electrical shop should not be grouped together.

While the investigations of the survey and the report of your committee have been largely directed towards the few part-time industrial classes now in existence, your committee feels that the policy of the Board of Education should be to extend these classes wherever favorable opportunities can be found.

The development of part-time classes in the absence of compulsory legislative enactment is a matter of slow growth in our individualistic communities. If this work is to be extended, steps should be first taken in industries representing large numbers of young workers and where there exists great need of trade extension instruction. The consent of some sympathetically disposed employer for the beginning of part-time classes with his employees should be secured. After such a beginning, efforts should be made through employers, associations and otherwise to secure the consent of all employers in the trade or industry in which the work has been started to release their employees for such instruction during a portion of the working day.

Finally it is obvious that part-time industrial classes cannot always be conducted in commercial establishments, but must be provided for in part at least in school buildings or rooms otherwise secured for the purpose.

Signed,

R. O. Small,
E. A. Cooley,
M. B. King.

RECOMMENDATIONS OF THE INDUSTRIAL EDUCATION SURVEY COMMITTEE.

Administration.

Based upon the foregoing findings, it is recommended:

That the administration of industrial education in the public schools of the city center in a director of industrial education responsible to the city superintendent of schools and the board of superintendents.

That the field covered by the director of industrial education be confined to such schools as meet the requirements for state aid and shall not include pre-vocational work, manual training and compulsory continuation school work.

That the director of industrial education be entrusted with as large authority and responsibility as is practicable in the administration of his work.

> The committee feel that the Board of Education, the city superintendent and the board of superintendents should recognize that their relation to the director of industrial education would be different in character from their relations with directors of academic branches. While school superintendents have experience and authority in the academic branches, they are usually without experience or special knowledge with respect to industrial education. They should therefore allow a more free-hand to the director of industrial education than they might be willing to grant to the supervisor of high schools or of branches of the work in elementary schools.

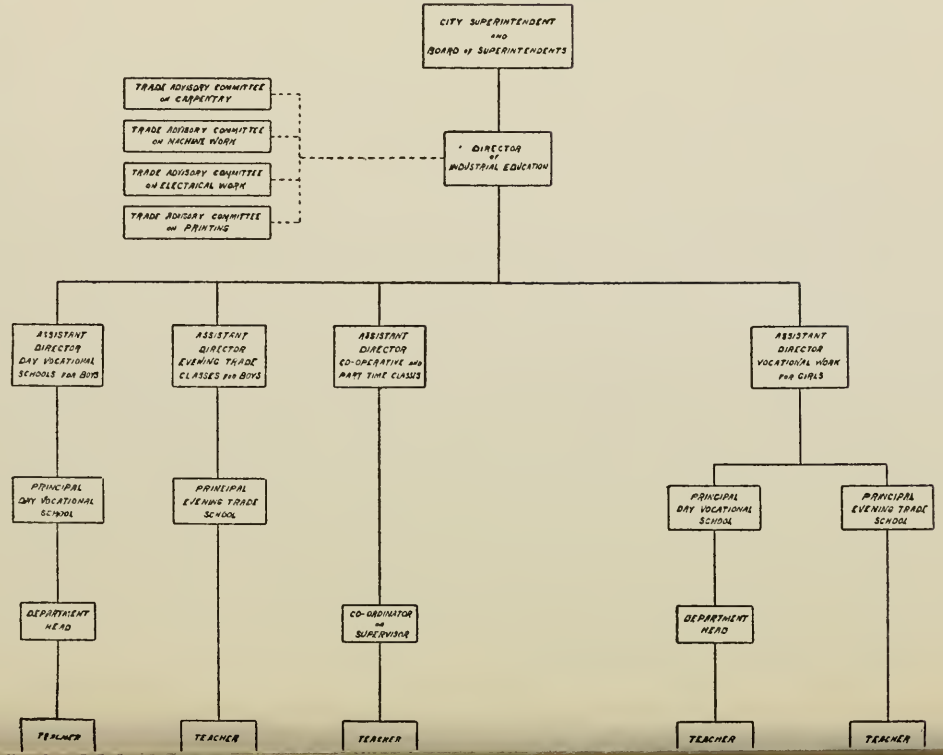
That four assistant directors be provided to assist the director of industrial education as follows: An assistant director of day vocational schools for boys; an assistant director of evening trade classes for boys and men; an assistant director of co-operative and voluntary part-time classes; and an assistant director of vocational work for girls.

That according to the terms of the accompanying chart the assistant director of day vocational schools for boys shall deal with the principals of such schools, the principals with the department heads and the department heads with the teachers.

That the assistant director of evening trade schools for boys and men shall deal with the principals of such schools, and the principals with the teachers.

ORGANIZATION CHART FOR ADMINISTRATION OF INDUSTRIAL EDUCATION IN THE CITY OF NEW YORK

(ADVISORY COMMITTEE)



That the assistant director of co-operative and voluntary part-time classes shall deal with the co-ordinators of co-operative classes and the supervisors of part-time classes and these with the respective teachers.

That the assistant director of vocational work for girls shall deal with the principals of day vocational schools for girls which are or may be established; and with the principals of evening trade schools for girls, the principals of day schools with department heads, these department heads and the principals of evening schools with the teachers.

That in order to insure the essential co-operation of the trades and industries in the administration of industrial education advisory committees, consisting of employers and employees be appointed by the Board of Education for each of the trades of printing, carpentry, machine work and electrical work, such committees to consist of seven persons each, three of whom shall be selected from trade employers associations, three from labor organizations, and that these six shall nominate one additional member who shall be a layman. In the first instance two members from each of the above trade groups shall be appointed for a term of one year, two for a term of two years and two for a term of three years, and the lay member for a term of three years. Thereafter as the term of such members shall expire, the vacancies caused thereby shall be filled for a full term of three years.

It is clear that the function of such committees cannot legally be those of control or veto, but it also seems clear that if they are accorded very specific advisory powers and definite provision be made for the consideration of their recommendations the way will be opened for the exertion of a very real and important influence on their part.

That the relations of such advisory committees should be with the director of industrial education, and this officer should be instructed before action is taken upon such matters, to invite the recommendations of the committees as to the establishment of new industrial schools and classes; the selection of equipment; the content and length of the courses of study; the requirements for graduation and certification; the number of pupils admitted to day vocational schools.

Furthermore, where questions of policy are concerned the committee believe it is highly desirable that the Board of Education obtain the advice of these committees as the only means of guarding itself against the danger of losing touch with the changing conditions of the trade.

Employment and Licensing of Teachers in Vocational Schools.

The committee recommends:

That the board of examiners appoint a special committee for each distinctive trade for which there is need of teachers in either shop or related shop subjects, the members of the committee to be appointed for one year and to be re-appointed as long as their services are satisfactory and they are willing to serve.

That each committee consists of three members, one of whom should be a member of the examining board in order to correlate the work of the board and its special committee and two of whom should be persons experienced in their knowledge of the trade and of education for the trade.

That the two lay members of the committee be paid a per diem rate for the actual time given to the duties assigned them as herein described.

> It is the conviction of the survey committee that the special committee on the certification of teachers for any given trade should be regarded only as an agency used by the board to assist it in the difficult and highly specialized task of obtaining competent instructors for the schools in the shop and related shop subjects of that trade and that all authority to pass finally upon the case of any applicant rests and should rest with the board of examiners. Furthermore, that the function of the committee should be to advise as to the conduct and standards of the examinations and recommendations in rating of applicants. All the papers regarding the applicant should be filed with the board.

That male applicants for licenses for teaching shop subjects should not be less than 25 years of age nor more than 40, and women applicants not less than 23 nor more than 40 years, which is the present regulation of the Board of Education for regular teachers, but that the proviso be made that this requirement should not apply to substitute teachers already in the service or to a successful teacher over 40 years of age desiring to enter the service in New York.

That the applicant should, if a man, present evidence of at least five years of approved and successful experience in industrial work subsequent to the period of his apprenticeship in the shop work which he desires to teach. That in the case of a woman, the applicant should present evidence of two years' successful experience in the trade or occupation approved by the committee or its equivalent; and demonstrate as the committee may determine her trade skill or knowledge.

That the teacher of a shop subject should be required to have at least a common school education, or its equivalent.

That three factors should be taken into consideration in passing upon the applicant; trade knowledge and skill, teaching ability, and general education.

That in examining applicants, the committee should avail itself of four different elements: written examinations, credentials, personal interviews, and practical demonstration.

Written examinations in the judgment of the committee are of relatively little value in testing the ability and the personal equipment of candidates. Such examinations can aid in determining the fitness of candidates to teach, but mainly to the extent that such examinations are limited to tests of general and trade knowledge.

Proper credentials should be given an important place in determining the fitness of an applicant. Affidavits as to trade standing and skill furnished by employers and fellow workers, diplomas, certificates, school records, correspondence school work, personal statements of former teachers, examples or records of actual work done, magazine articles or books written by the candidates; statements as to teaching ability based on previous service as instructor of apprentices or as a teacher, should all be acceptable as credentials.

A personal interview is necessary in estimating the qualifications of the applicant in such matters as appearance, personality, health, general intelligence and of social and economic outlook. It has also an important supplementary to the written examinations and credentials in furnishing additional information concerning trade and teaching experience.

Practical demonstration should be used to supplement other tests whenever doubt exists as to either the trade qualifications or teaching ability of the candidate.

That all teachers of shop work employed on the basis later recommended who have not completed at least 120 hours in an approved teachers' training course be required to meet this minimum during the first three years of service.

That provision for such instruction be made by the public school authorities.

That the pay of all male teachers of shop work in day vocational schools be made seven dollars ($7) a day for the first year of service, and that such teachers, upon the recommendation of the principal of the school and the director of industrial education, shall receive an annual increase in the per diem rate to be determined by the Board of Education, which shall make the annual earnings of such teachers not less than that provided by the present salary schedule for shop teachers in day vocational schools.

The present salary schedule for male shop teachers begins at $1500 and progresses with an annual increase of $125 until a maximum of $2500 is reached.

That in the case of women teachers, as under the existing regulations of the Board of Education the probationary teacher who begins with a minimum of two years of trade experience, as what is known as a substitute or probationary junior teacher, be, after one year of satisfactory experience as a teacher of a trade subject, promoted to be a probationary second assistant; after a second year of such service, to be a probationary first assistant and after a third year of such service to be a regular teacher of the subject.

That the present schedule as given below in regard to salaries for these vocational teachers in schools for girls be approved:

Substitute head teacher (female), $6.00 per day.

Substitute placement and investigation teacher (female), $5.00 per day.

Substitute department vocational teacher (female), $6.00 per day.

Substitute first assistant teacher of vocational or trade subjects, $4.50 per day.

Substitute second assistant teacher of vocational or trade subjects, $3.50 per day.

Substitute junior assistant teacher of vocational or trade jects, $2.50 per day.

Substitute teacher of sewing, $4.00 per day.

Substitute in non-vocational subjects (female), $0.50 per

Substitute female teacher-clerk, $4.50 per day.

Substitute trade-order teacher (female), $3.50 per day.

Substitute assistant trade-order teacher (female), $ per day.

Substitute assistant female teacher-clerk, $3.50 per day.

Substitute vocational or trade helper (female), $1.00 per d

That the Board of Education shall, upon recommendation the advisory committee and the director of industrial educ tion, authorize any shop teacher in a day vocational school t return to the practice of the trade for a period not to exceed six months, and for such experience as the advisory committee and the director of industrial education shall indicate, without los of compensation.

Teacher of Related Subjects: That the applicant should least have a high school education or its equivalent. He shou have in addition as a minimum, 300 hours of additional instru tion in the technical subject he desires to teach or an experien in the subject accepted as an equivalent. In order that he

be able to apply his subject to the trade or occupation to which it is related, he should have had at least one year of actual experience in the trade or occupation concerned or one year of approved practical contact in some capacity with the trade or occupation.

That applicants who can meet the requirements set up for teachers of shop subjects or teachers of related technical subjects and can present evidence of at least one year of successful teaching experience in the subject for which a license is sought, may be appointed as regular teachers, subject to the regular probationary period.

Principal of a Vocational School: That to be eligible for a license as principal of a vocational or trade school, the applicant must have one of the following qualifications:

(a) "Graduation from a college or university recognized by the Regents of the University of the State of New York together with ten years' satisfactory experience in the practice of a trade and in teaching and supervision, provided that not less than two years of such ten years' experience shall have been in the practice of a trade, represented in the school. Five years of approved practical contact with the industry involved shall be considered as equivalent to two years in the practice of the trade."

(b) "Graduation from a college or university recognized by the Regents of the University of the State of New York, together with ten years' satisfactory experience in teaching or supervision, provided that not less than five years of such experience shall have been in teaching, supervision or investigation in vocational education in the field represented by the school."

Central Schools.

The Committee recommends:

The establishment of a Central School of Printing which shall provide trade extension courses for journeymen and advanced apprentices, part-time classes for younger apprentices and all-day pre-employment courses, and that such courses take the place of the instruction in printing at present carried on in the day vocational schools and evening trade schools.

That a Central School for the Metal Trades be established to include trade extension courses for advanced apprentices and journeymen, part-time classes for younger apprentices and pre-employment all-day courses, these courses to take the place of the instruction now given in the day vocational schools and evening classes maintained by the City.

That there be established one or two schools for the building trades; that trade extension courses for advanced apprentices and journeymen and part-time classes for younger apprentices be provided as well as all-day pre-employment courses, and that the work now done in the three vocational schools be concentrated in one or two schools, to be located as the demand shall indicate.

Day Vocational Schools.

It is recommended:

That pupils admitted to these schools shall be at least 14 years of age and have completed at least the 6th grade of school. That they should be required to pass a physical examination based on the particular needs of the trade in question before entering the school.

That the numbers admitted should not exceed the point at which the number of graduates will be greater than experience indicates can be absorbed by the trade. That when the demand for admission to these schools exceeds the number so determined, competitive examinations aimed to test manipulative skill and general intelligence should be used as a basis of selection.

That courses provided in the day schools include shop training, directly related technical instruction, instruction desirable for citizenship and elements of general education. Material for courses of instruction in shop work and in related subjects are indicated in the analysis of the trades as given in the different surveys.

That the organization of courses of instruction remain on a basis that will require two years for completion as at present.

That the length of the school day be as at present, seven hours. That the entire school training of shop and academic instruction be continued for eleven months of the year.

That the number of pupils assigned to one teacher of shop work shall not exceed sixteen.

That in the schools devoted to the printing trades, machine trades and building trades, there shall be a certain amount of productive work, not for the sake of production, but because in the judgment of the committee experience in productive work is the only fully efficient method of trade instruction; that any productive work be limited to the needs of the vocational school system; that the recommendations of the advisory trade committees be particularly sought in regard to the character and

quality of this work; that such productive work should be supplemented by technical exercises of the laboratory type.

That before any further classes in day vocational schools are opened, equipment should be provided that is sufficient in extent to meet all the needs of the numbers under instruction and of a character and quality that conform to the requirements of modern trade practice.

Evening Trade Classes.

The committee recommends:

That the city continue the maintenance of the evening trade schools which deal with trade extension classes whose members are employed during the day in occupations to which the instruction offered in these classes is distinctly related.

That sixteen years be the minimum age of pupils admitted to evening trade extension classes.

That applicants for admission to trade extension classes be not accepted unless employed during the day in an industrial occupation approved by the trade advisory committee as directly connected with the trade in which trade extension instruction is offered.

That a nominal deposit be required in each course by all pupils registered in evening trade extension classes and that this deposit shall be returned to those pupils who complete at least 75 per cent of all sessions of the classes of which they are members.

That all evening trade schools be under the general direction of the person in charge of the entire system of industrial education.

That the organization of the trade extension courses follow the present plan which offers two nights per week for a definite number of weeks in any course of instruction in any specific trade subject, but not exceeding thirty weeks a year for any special unit, and that pupils should be given an opportunity to attend a second class in a related trade subject, with the consent of the director of industrial education.

That the minimum number of pupils in all trade extension classes be fixed at ten, and that the maximum number in shop classes be twenty, and in classes in trade drawing, shop mathematics and trade science be twenty-four.

That the advertising of evening trade extension classes be

controlled from the office of the director of industrial education and that all such advertising should emphasize courses and opportunities available for the worker rather than some special school for the purpose of accelerating the numbers in attendance therein.

That sufficient clerical help be provided to take care of the routine work and records in order that the principals of evening trade schools may devote practically their whole time to visiting classes in their charge and that instructors may devote their whole time to instruction.

That the Board of Education require the director of industrial education to formulate courses of instruction for the evening trade schools and in this connection to commend to his attention the material gathered in respect to the trades of printing, machine work, inside electrical work, and carpentry and joinery by this survey.

> The committee records its conviction that the short unit course of instruction in evening schools has its special value for adult workers in the trades who have not the habit or inclination to attend school courses of any length and who would be drawn to the evening school only to obtain assistance for some direct and particular need which arises in their immediate practical experience. For such men and such needs, short unit courses of four to twelve weeks in length may be of service.
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> For the young men between 16 and 21 years of age, who form the large bulk of evening trade extension students, it is far better in the judgment of the committee to offer courses of a year, two years and even three years in length, composed of matter that relates directly to trade needs, and in which instruction the later stages is differentiated to the fullest extent. It would be a great mistake in the judgment of the committee to emphasize solely to these young men in the developing period of life, whose success depends to a large extent upon their equipment gained through outside study, the idea of the short unit course and to give prominence only to a plan for brief phases of instruction.

Voluntary Part-Time Industrial Classes.

The committee recommends:

That the instruction in voluntary part-time industrial classes should consist for the most part of subjects such as drawing, mathematics, and science related to the industrial needs of the occupations in which the workers are employed, and in part of subjects which will contribute to the employees social and civic development.

That all part-time industrial classes wherever practicable should be organized as to trades and not as to time served in industry or educational qualifications or age of pupils. Because

of the inevitable variations in age and previous school experience, there should not be more than twenty students registered in a class at any one time. By limiting the number to this extent small group and individual instruction which is essential can be provided.

Part-time industrial classes cannot always be conducted in commercial establishments, but must be provided for in part at least in school buildings or rooms otherwise secured for the purpose.

That the policy of the Board of Education be to extend voluntary part-time industrial classes wherever favorable opportunities can be found.

In the judgment of the committee the development of the part-time classes in the absence of compulsory legislative enactment must be a matter of slow growth in our individualistic communities. If this work is to be extended, steps should be first taken in industries representing large numbers of young workers and where there exists great need of trade extension instruction. The consent of some sympathetically disposed employer for the beginning of part-time classes with his employees should be secured. After such a beginning, efforts should be made through employers' associations and labor organizations to secure the consent of all employers in the trade or industry in which the work has been started to release their employees for such instruction during a portion of the working day.

It is the judgment of the committee that the only competent solution of the problem of part-time vocational instruction appears to lie with the State Legislature,—that shall make compulsory the attendance in such classes of all male minors from 16 to 18 years of age who are legally employed, and that shall at the same time compel employers, under appropriate penalties, to grant opportunities to such minors to attend these classes during a portion of the working day.

Co-operative Classes.

The committee recommends:

That the City continue to maintain co-operative industrial classes with certain modifications as noted below at least for a period of several years to come in order that the value of such work may be more definitely determined.

The committee makes this recommendation with the full realization that not many high school students can be counted upon to enter manual occupations in the industries. The ideas of the homes from which come the large body of high school students are directed distinctly away from such occupations for their sons and daughters and it is evident that the contribution of the high school to the field of industry must be found in supplying young men with well-trained minds who are fitted after a further period of practical experience to attain to positions of at least subordinate leadership. Such positions have been termed the non-

commissioned officers of industry and include draftsmen, inspectors, testers, designers, and in general all positions of the supervising and foreman type.

From this analysis, it is evident that the co-operative classes in the high schools cannot be expected to reach large numbers and the critical questions that ultimately must be faced is whether the return for such work justifies its expense to the city.

On the other hand, the committee is convinced that the co-operative industrial course should not be regarded as a college preparatory course, but as a course which has for its predominant purpose to train the student for advantageous entrance into specific industry.

That the industrial co-operative work should be organized as to trades and each trade should be centralized in one building or school. Such centralization of the work appears to be necessary to secure groups of sufficient size to allow the formation of classes of individuals with similar trade interests.

That the division of time for the co-operative industrial classes remain as at present—half-time in shop and half-time in school.

That co-operative industrial classes should not be organized unless there is a definite agreement with the employer specifying a program of shop experiences with the hours of labor and wages. This agreement should be signed by the school authorities, the parent representing the boy, and the employer. Without such an agreement, it seems impossible to serve adequately the needs of the state, the boy and the employer.

That co-oprative industrial classes be limited in so far as practicable to those industries in which at least thirty students are available for a closely related trade group that can be supervised effectively by one co-ordinator.

That the co-ordinator be selected on the basis of the requirements of the particular trade for which the co-operative industrial class is to train. That is, the co-ordinator for a co-operative industrial class in machine shop work should be a man with a thorough understanding of the machine trade. This same principle should be applied to the selection of all other co-ordinators.

That each co-ordinator be at the same time the teacher of related drawing, mathematics, and science for a double platoon group in the school and the supervisor of the work of the students of this group in the commercial establishments. Such a plan would permit both the interests of economy and efficiency to be realized.

That the character of the instruction in drawing, mathe-

matics and science be such as to secure the greatest possible degree of relation to the trade or occupation in which the student is employed.

That in addition to the related work instruction be provided as far as practicable in those subjects which make for social and civic development.

That inasmuch as the co-operative industrial classes have many aspects in common with the part-time industrial classes, both types be placed in charge of a common assistant director responsible to the director of industrial education.

That the entrance requirements for the industrial co-operative classes be based upon age rather than the completion of the first year of the high school course, and boys should be allowed to enter such classes at the age of 16 years.

Furtherance of Survey.

For the comprehensive future development of a program of industrial education it is recommended that provision be made for the study of other important trades and industries, and for the further study, at appropriate intervals, of the trades included in this survey. It is the conviction of the committee that facilities should be placed at the disposal of the director of industrial education to conduct such studies.

It is also recommended that the Board of Education appoint advisory committees for all trades at present represented in the day vocational or evening trade schools upon the same basis as those already recommended by this committee.

The committee further recommends that the director of industrial education, in co-operation with the trade advisory committees, make every effort to develop trade agreements with employers associations and labor organizations in regard to the following matters:

1. Credit on apprenticeship time for the graduates of pre-employment schools.
2. Compulsory attendance of apprentices or young workers in part-time and evening classes.
3. The development of dull-season classes.